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Original Articles.

EMPYEMA OF THE FRONTAL SINUS.*

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Suppurative sinusitis or empyema of the frontal sinus is a comparatively rare affection, although, all told, many cases have been recorded. It is frequently an acute disease characterized by pain over the frontal sinus, which continues persistently for several days and is finally relieved by a discharge of pus from the nose; or the pain may come on daily, lasting for a few hours only. These acute cases frequently run a rapid course and terminate in resolution. Chronic empyema may be of the variety known as latent sinusitis which, according to Mayo, Collier and Milligan, is characterized by symptoms and signs similar to those of acute empyema and yet not very different from sinusitis of a simple non-suppurative catarrhal character.

The latent disease is essentially chronic, but on account of the free opening from the sinus into the nasal passages there is no permanent collection of pus and none of the external manifestations are observed which appear when the outlet from the sinus is obstructed.

The common characteristics of the more formidable affection attended by obstruction of the outlet are: severe pain similar to that of the latent disease, more or less external deformity, such as swelling of the eyelids, tumor at the inner canthus or extending above the eyebrow, and external abscess of fistula.

ANATOMICAL AND PATHOLOGIC CHARACTERISTICS.

The manifestations of this disease vary greatly in different cases, largely because of variation in the anatomic formation of the parts. In not a few individuals the frontal sinus is absent either on one or both sides. The frontal sinus may be small on one side and large on the other; the small side being reduced to a mere slit, in some cases, while the other may constitute a large roomy cavern extending high up into the frontal bone and far into the zygomatic process. The sinus is commonly divided by bony ridges into more or less marked recesses, which account for the difficulty often experienced in obtaining free drainage. It is separated from its fellow of the opposite side by a bony septum which should be found in the median line, but which frequently passes obliquely to one side so that one sinus is enlarged at the expense of the other. The septal wall of the sinus frequently shows bony defects, but, according to Killian, actual communication between the two cavities is extremely rare because the opening in the bone is filled in by mucous membrane. In one of the cases that I shall report the septum had entirely disappeared and there was no bony posterior wall, though it is not improbable that these results came from the pressure of the long-pent-up pus. It is probable that defects in the cerebral wall are sometimes congenital. In a case reported by Gibson, the cerebral wall of the right sinus was absent. In my case it was absent on both sides. In Gibson's case septic meningitis followed suppuration of the sinus; he supposed on account of the absence of the posterior wall. Usually the thinnest of the walls of the sinus is its inferior, or orbital, plate, where the bone is only about one millimeter in thickness. This thin area is situated just back of the orbital margin, and, as Turner determined, is found about half an inch external to the middle of the root of the nose.

The sinus begins to develop about the seventh year of life and is not perfected until about the twenty-first year; therefore we do not find disease of this cavity in children. The anatomy of the outlet of the sinus, known as the canalis nasofrontalis, is even more complicated and variable than that of the sinus itself; in fact, the structures that surround it are so intricate in composition that it is hard to form a definite mental picture of its position. The opening into this canal may be situated either near the anterior or posterior wall of the sinus. The canal itself is a narrow tube which, according to Gustav Spiess, averages about nine-sixteenths of an inch in length and its usual diameter at its outlet is from one-twelfth to three sixteenths of an inch. Sometimes it is not a canal, but a mere hole leading from the frontal sinus directly into the infundibulum. Turner says that this aperture is usually from one-twelfth to five-sixteenths of an inch in diameter. It commonly starts from the anterior lower portioln of the frontal sinus and passes downward and backward, opening into the infundibulum; but it may open in front of the hiatus semilunaris under the anterior end of the middle turbinated body. The canal is sometimes transformed into a tortuous passage by the encroachment on its lumen of the fronto-ethmoidal cells of Bryan or the cellulæ frontalis of Killian. These cells are situated both in front of and behind the sinus, or they may open into the sinus or into the infundibulum. Some authors confound the canalis nasofrontalis with the infundibulum, an error very confusing to students. The infundibulum is that part of the middle meatus into which the frontal sinus and antrum of Highmore discharge by means of their natural openings. It is situated in the upper part of the hiatus semilunaris behind and external to the processus uncifformis of the ethmoid bone, high up under or external to the anterior third of the middle turbinated body. The hazy impression possessed by some concerning the location of the opening of the frontal sinus is illustrated by Milligan, who mars his otherwise superior article on empyema of the frontal sinus by directing that, in introducing a probe, it be passed upward between the

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middle turbinated body and the septum, a direction which would guide it to the inferior surface of the nasal bones and the cribriform plate. In order to pass a probe into the canalis nasofrontalis it is necessary to direct it to the outer or maxillary side of the anterior end of the middle turbinated body. It should not be forgotten that this canal opens into the infundibulum close beside the opening of the antrum of Highmore, and that occasionally the two discharge by a common opening into the hiatus semilunaris. This explains the fact that suppuration of one of these cavities often causes infection of the other; indeed, Milligan has observed that fluid injected into the antrum of Highmore is sometimes discharged through a surgically made external opening in the frontal sinus. Sometimes the canal leading from the frontal sinus is absent from one side, and the two sinuses discharge by a common outlet, while in other cases the sinus may discharge through the ethmoidal cells.

The normally thin mucosa of the frontal sinus is subject to varying degrees of swelling in both the acute and chronic forms of sinusitis. This is apt to lead, in acute cases, to great edematous thickening, and finally to polypoid proliferation. In the chronic aggravated forms of the disease most authors speak of granulations and polypi that may fill the sinus; nevertheless, true granulation tissue is rare, and for the most part the epithelium remains intact, with the exception of the loss of cilliæ, while mucous polypi and hyperplasia of the mucosa form the bulk of the mass that fills the sinus. The hyperplasia and polypoid masses are not confined to the lumen of the sinus, but appear also in the hiatus semilunaris under the middle turbinal. The mucous membrane in this latter position may also be found in a state of polypoid degeneration.

The mucosa over the processus uncinatus sometimes swells and forms a thick fold of hyperplastic tissue which fills much of the space beneath and to the outside of the middle turbinated body. This so-called lateral fold—*lateraler Schleimnhautwulst* of the Germans—interferes with the drainage of the sinus, which is also obstructed by masses of polypi in the middle meatus. On account of the anatomic formation it frequently happens that suppuration is not confined to the frontal sinus but extends to the ethmoidal cells, the antrum of Highmore, or even to the sphenoidal sinus. As a result of necrosis or caries of the bony walls the suppurative process may extend to the brain or the infectious material may be carried through the bony wall by way of the numerous venous channels, while the bone itself remains intact. Thus we may account for the orbital and intracranial complications which occasionally occur, such as abscess in the upper angle of the orbit, meningitis, abscess of the frontal lobe, and thrombus.

ETIOLOGY.

Acute frontal sinusitis usually results from an acute coryza, especially that attending influenza. In a limited number of cases, it follows acute infectious diseases. The most important factor in the etiology of empyema of the frontal sinus is infection from the other sinuses. It has already been shown how infection of the antrum of Highmore may lead directly to suppuration when the two cavities open by a common duct, and also how suppuration of the cellulæ frontales or ethmoid cells will, in many instances, lead to the same result. Most of the chronic cases are a continuation of acute sinusitis which is perpetuated by interference with free drainage, as for example by polypi, extreme deflections of the septum or large exostoses from this bone, or by hypertrophy of the turbinated bodies. Anything, indeed, which obstructs the natural orifice, to a greater or less degree, favors the development of empyema as the result of the acute catarrhal affection. Karutz reports one case in which frontal sinusitis followed cauterization of the inferior turbinated body, and it is easy to understand how this might result from an extensive burn in persons with certain idiosyncrasies or in conditions favoring inflammatory processes. In many cases the frontal sinus undoubtedly becomes infected from the ethmoidal or fronto-ethmoidal cells, and such an accident may happen during suppuration in any of the accessory sinuses of the naris.

SYMPTOMATOLOGY.

The symptoms of acute suppurative inflammation of the frontal sinus usually come on a week or two after the subsidence of the coryza which caused it. They commonly consist of photophobia and pain in the eye and free lacrymation, with pain in the region of the supra-orbital nerve. The pain is commonly intermittent, and is apt to come on at 9 or 10 o'clock in the morning, last for a few hours, and then pass off until the following day, when it is prone to return at the same hour. It is likely to last somewhat longer each successive day and it usually steadily increases until the eighth or tenth day, after which it may be constant, though in some cases the intermittent character of the pain continues throughout the disease. The pain is most prominent in the region of the supra-orbital nerve, but is for the most part limited to the area of the sinus. The severe symptoms usually subside when discharge of pus takes place. Rhinoscopy commonly furnishes no evidence until about the second week of the disease, when pus appears in the naris. Sometimes the pus is discharged in large quantity at once, with a gush, but usually it comes at first more or less freely and then continues to trickle away during the day, while the flow is apt to be much diminished at night.

In latent empyema of the frontal sinus there is sufficient drainage to prevent the accumulation of any great amount of pus or at least a sufficient amount to distend the walls of the cavity.

The disease usually comes on insidiously, and generally the first symptom to attract attention is pain in the region of the supra-orbital nerve; but later on this is likely to be felt at the root of the nose. When the pain is intermittent, it may be mistaken for neuralgia. It is apt to be aggravated by stooping over and sometimes is increased by lying down. It may be slight or quite severe, though it seldom becomes unbearable. This pain is frequently mistaken for syphilitic headache and is treated accordingly.

In a considerable number of cases the symptoms are not marked. The discharge is so slight that it attracts but little attention and the patient may go on for years suffering from what he denominates neuralgia or catarrh, without obtaining an accurate diagnosis. Symptoms referable to the eye, sometimes result from inflammation of the frontal sinus; as for example, sensitiveness of the upper lid or eyeball, photophobia, haziness or diminution of the acuteness and of the field of vision. Hyperemia of the fundus may also be noted in some instances.

When the canalis nasofrontalis is absent or is closed from any cause, the pus gradually collects and distends the walls of the frontal sinus so that a tumor may

appear at the inner canthus of the eye, at the root of the nose, or above the orbital ridge; such a manifestation, taken in connection with more or less intermittent pain, would at first lead us to suspect empyema of the frontal sinus, so that such cases are much less liable to escape observation than the latent variety of the disease.

One of the least difficult but, unfortunately, one of the uncertain aids in the diagnosis of this affection is transillumination. Kuhnt claims that the area of the frontal sinus can be accurately defined by this method, and A. Logan Turner has demonstrated the accuracy of this statement by opening the sinuses after they had been mapped out by transillumination; but unfortunately the anatomic variations already mentioned show that this method can not always be relied on in the diagnosis, although in Turner's investigations it did not suggest that a sinus was present in any case where none was found. In transilluminating the frontal sinus, we commonly use a small lamp enclosed in a cylinder about one-half inch in diameter, the open end of which should be applied as nearly as possible beneath the thinnest portion of the floor of the sinus, that is, about five-eighths of an inch from the middle of the root of the nose, just beneath the supra-orbital margin, and one must be careful to crowd it back far enough in the orbit to avoid illuminating only the soft parts of the eyebrow. If the patient directs the eyes downward, more room will be allowed for the application of the light in this position. Unusual density of the bones composing the walls of the sinus, unusual thickness of the anterior wall—that is, more than five-sixteenths of an inch—or a close approach to each other of the anterior and posterior walls at the bottom of the sinus, or actual absence of the sinus, will give a shadow and may lead the observer to suspect pus when it is not present. In rare cases the sinus appears light even though it contains pus, especially when the cavity is mostly occupied by mucous polypi or cysts. It will be seen, therefore, that transillumination, though a valuable aid, does not necessarily furnish diagnostic signs. Nevertheless, this method should be used in connection with other means of diagnosis. Transillumination also aids us in determining the position of the septum between the two sinuses. As I have already stated, this position is not necessarily in the median line. If one sinus is illuminated and the other yields a shadow, it is easily determined where an opening should be made in order to enter the affected cavity. Gradenigo claims that the empty sinus can be mapped out by careful, gentle percussion; therefore, sometimes this method of diagnosis may be of value. One of the most prominent symptoms of suppuration of the frontal sinus is a discharge of pus from one naris. On rhinoscopic examination and careful cleansing of the cavity, when there is not too much swelling, we may discover the point of exit of the pus. If this is found to be from the middle meatus, external to the anterior end of the middle turbinated bone, we may know that it comes either from the antrum of Highmore, the anterior ethmoidal cells, the fronto-ethmoidal cells or the frontal sinus, or from all of these combined. It will then be necessary to reach a diagnosis by a process of exclusion. Probing the frontal sinus through the naris is not exceedingly difficult when the outlet opens directly into the anterior part of the middle meatus, but if the opening is into the infundibulum, this procedure is practically impossible. In any case there is liable to be considerable difficulty in determining whether the probe has passed into the frontal sinus or whether it has entered the ethmoidal or the fronto-ethmoidal cells. Killin suggests that sometimes a probe can be felt to run against the front wall of the sinus, and that in other cases the patient can localize the position by his own sensations. He also determines the depth to which the probe has been passed, and whether it has merely reached the orbital border or has passed well into the frontal sinus, by bending a second probe to the exact shape of the first and placing it externally against the face in a position corresponding to that of the probe in the nasal passages. The fluoroscope has been used by Max Scheier, to determine whether the frontal sinus has been entered by the probe. He found that in this way he could readily see the metal probe, but he also discovered that the depth to which the probe had been passed was a very uncertain guide, for sometimes the fluoroscope showed that it was in the ethmoidal cells when he supposed that it was in the frontal sinus. It is my custom, when probing the frontal sinus, to use a long silver canula, attached to a small syringe, Fig. I, through which air can be blown into the cavity, which will force out pus or air bubbles if the cavity contains liquid. Another satisfactory method is to have the syringe charged with a warm 50 per cent. solution of pyrozone, which is injected into the cavity. In case pus is present this will be immediately followed by a profuse frothy discharge. It should be remembered that exploration by means of a probe or canula is not entirely without

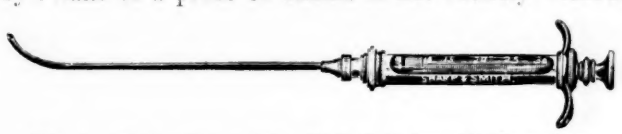

Fig. 1.—Long silver nozzle attached to hypodermic syringe.

danger, for it is recorded that one death from meningitis has resulted from piercing the cerebral wall of the sinus, and in another instance the cribiform plate of the ethmoid has been perforated by passing the probe in the wrong direction between the middle turbinated body and the septum.

DIAGNOSIS.

Notwithstanding all the factors that have been pointed out, the diagnosis in some cases will be extremely difficult, especially in the latent form of the disease. If the outlet from the frontal sinus has become obstructed, so that external manifestations appear, the diagnosis is easier, but even then we must bear in mind that tumors of the sinus, dermoid cysts, distension of the lacrymal sac, and cellulitis of the orbit due to other causes than frontal sinus suppuration may give rise to external swelling. The diagnosis of latent empyema must be made largely from the symptoms, the shadow shown by transillumination and exploration through the canalis nasofrontalis with the probe or canula and the injection of air or peroxid of hydrogen. The diagnosis when the outlet from the sinus is obstructed will depend largely on the pain and external swelling, but even in these cases there may be some discharge from the sinus so that pus will appear in the middle meatus.

Tumors of the sinus may be attended by a purulent discharge, so that it may be impossible to make a differential diagnosis until the cavity has been opened. Dermoid cysts and dacryocystitis, both of which may cause some of the eye symptoms already referred to, may usually be excluded by the fact that they do not cause a purulent discharge into the naris. Orbital cel-

lulitis may result from inflammation of the ethmoidal cells or of the frontal or sphenoidal sinus. When the latter is the cause, the pain is severe and the inflammation is deep-seated and usually early blindness follows; whereas, when disease of the frontal sinus is responsible for this affection, the inflammation is more likely to involve the anterior part of the orbit with less serious consequences to the eye, which may be limited to diplopia and displacement of the globe.

PROGNOSIS.

The prognosis in acute inflammation of the frontal sinus, whether suppurative or not, is usually good. Most patients will recover within a few weeks if care is taken to keep down the swelling of the nasal mucous membrane. The prognosis in the latent variety of empyema is much less satisfactory as, in many of these, suppuration continues for several years. The prognosis in marked cases of empyema where the outlet from the frontal sinus is obstructed is equally unsatisfactory as to time, and it is occasionally grave on account of extension of the infection to neighboring parts.

TREATMENT.

Treatment is commonly recommended with such confidence as to lead a novice to believe that the affection may be easily cured, but unfortunately this confidence is apt to be rudely shaken by experience, for notwithstanding the most approved methods at our command, in some instances the suppuration will drag along for years. In acute cases the treatment should consist of warm and soothing detergent and antiseptic sprays for cleansing the nares, with the free use of a watery extract of adrenal glands or of a solution of adrenalin several times a day, or the more guarded use of small quantities of cocain three or four times a day to keep down swelling and thus permit free drainage. In most cases it will not be necessary to wash out the frontal sinus. In latent chronic cases detergent sprays or washes should be employed to keep the nares clean, and various mild antiseptic powders or sprays may be used advantageously three or four times daily; however, these measures will generally prove inadequate to check the suppuration, and it will be necessary to frequently wash out and disinfect the frontal sinus. To accomplish this, it is usually necessary to first remove the anterior end of the middle turbinated body in order to be able to introduce a canula. Many of the solutions that have been employed for disinfecting and cleansing this cavity act well, but owing to the various pathologic conditions, all will sometimes necessarily fail. One of the cases that I shall report shows the good effects of simple measures, but another well illustrates the disheartening lack of results even with persistent treatment by the usual remedies, though it also shows the marvelous effects that may sometimes be obtained by the injection of a solution of from 3 to 8 per cent. of the preparation of silver known as protargol. In chronic cases of suppuration of this sinus, it is important to establish free drainage and it is sometimes necessary to open the frontal sinus and remove diseased tissues. When the milder endonasal methods have failed, success has sometimes been attained by opening the sinus through the naris with a Palmer drill, or with Krause's antrum trochar. Under normal conditions it would be difficult with either of these instruments to enter the frontal sinus in safety, but when pus has been pent up in the cavity for a long time, the parts are sometimes so distended that it is comparatively easy to make the opening through the naris. If the Palmer drill (Fig. 2) is used the opening will necessarily close by granulation, in two or three weeks, but if a Krause's antrum trocar (Fig. 3) is employed it is practicable to introduce through it a drainage-tube, as I have elsewhere described.[1] The best surgical procedure in such cases undoubtedly consists of making an external opening into the sinus, of considerable size, and then breaking down the floor of this cavity and establishing a free communication with the naris, which should be maintained by the aid of a large funnel-shaped drainage-tube; however, as shown in one of the cases that I shall report, even this method can not always be counted on to effect a speedy cure. The anatomic variations from a typical form, already mentioned, sometimes render any of these operations unexpectedly difficult and dangerous. To facilitate endonasal operations it is often necessary to reduce hyperplasia, to remove polypi, and to open the anterior ethmoidal or fronto-ethmoidal cells with the cutting forceps or curette. In chronic cases, even when there is no retention, it should be remembered that there is constant danger while suppuration exists in the frontal sinus, as it may cause thrombosis of the cerebral sinuses, meningitis, cerebral abscess or pyemia.

Fig. 2.—Palmer's frontal sinus drill.

In any case, when there are marked ocular, orbital, or cerebral symptoms, and in the more violent types of the disease which cause severe pain, an external operation should be done at once. When a radical operation becomes necessary it is customary to shave off the eyebrow and make a central incision through this region down to the bone, pushing back the periosteum until sufficient space has been denuded. After the soft tissues have been removed the bony wall may be opened either by a trephine, chisel or circular saw. Tilley's central vertical incision, advocated by Collier, is much in vogue at the present time. This cut is made in the middle line from the root of the nose, and extends two inches upward. Collier removes a button of bone by the trephine at the median line, thus exposing the mucosa of both sinuses. In this way he determines whether one or both are involved in the suppuration. Milligan prefers the unilateral operation. After the mucosa is exposed he makes a small opening in it and passes a probe into the sinus; if pus is found the mucous membrane is then cut away, the sinus opened widely, and if hyperplastic tissue or polypi are found these are throughly removed by a curette. The deformity resulting from these external operations on the frontal sinus is chiefly due to the sinking in of the soft parts. To avoid this, German operators, during the last few years, have opened the front wall of the

Fig. 3.—Krause's trochar.

1. Ingals: Dis. of Chest, Throat and Nasal Cavity, 4th Ed., p. 657.

sinus osteoplastically, that is, by creating a bony flap including the rim of the orbit. This flap is lifted upward so as to expose the sinus freely, and in addition the floor of the cavity is opened downward into the orbit so that all parts are freely exposed, permitting the removal of any diseased tissue that the sinus may contain. The bony flaps made in this way are reunited after a few days, while there is still hope of primary union. Some operators have contented themselves with opening the floor of the sinus only, but this does not give free access to the cavity; therefore, it should not meet with much favor. Where, on account of the extent of the disease, a very radical operation is indicated, both the anterior wall and the floor of the sinus can be removed, leaving a bridge of bone at the orbital edge. This operation is said to be followed by less deformity than that on the front wall alone, as the

Fig. 4.— Flanged frontal sinus drainage tubes.

soft parts of the orbit help to fill up the space of the sinus cavity.

Having opened the frontal sinus above the orbit, the next step in the operation should be to establish free drainage into the nasal cavities. This may commonly be done with a Krause's bent trocar, which is passed from above downward into the naris, where it is met by the little finger introduced as a guide into the nostril of the affected side. This opening should be of ample size to allow the introduction of a large-sized, funnel-shaped drainage-tube, like that of Luc, or a modification like the tube I employed in one of the cases that I shall report, having a flange on the lower end to prevent it from creeping up into the sinus (Fig. 4). In most cases this drainage-tube will have to be kept in place for weeks or months and, as in one of my cases,

Fig. 5.—Drainage tube for antrum (½ inch long).

it is liable to creep upward into the frontal sinus notwithstanding the flange; therefore, it is best to leave a small opening externally which may be kept patent by a rubber tube flanged at both ends, like those recommended for drainage of the antrum of Highmore (Fig. 5). It is recommended that the external opening be closed at once, but patients will be unable to cleanse the frontal sinus from the nose; therefore, I think that a small external opening should be maintained in the majority of cases until suppuration ceases. It is often impossible to be sure whether the pus escaping into the nose comes altogether from the frontal sinus or from the ethmoidal or fronto-ethmoidal cells, consequently it is sometimes desirable to break down these cells, together with the floor of the sinus, by means of a gouge, in order to make very free drainage; even then granulations are liable to spring up which will soon close the opening; therefore, a large funnel-shaped drainage-tube should be introduced. In not a few cases the chief difficulty has been found in elimination of the ethmoidal suppuration and the maintenance of a free outlet into the nose. To overcome this difficulty, Barth, Winckler, and Killian recommend a temporary osteoplastic resection of the nasal process of the superior maxillary, and of the nasal bone. This procedure is carried out after the frontal wall of the sinus has been opened, by severing the nasal bone entirely from its fellow in the center, and extending the cut upward to the opening into the front of the sinus, then turning the flap outward like a door. Free access is thus gained to the nasal cavity and the floor of the sinus, which is totally removed and the suppurating ethmoidal and fronto-ethmoidal cells and all cavities clear back to the sphenoidal sinus, and even including this, are broken down and cleared out, if necessary. After all the diseased structures have been cleared away the flap is reunited in its normal position, and although the operation has been very extensive, it is said that healing occurs without much more deformity than in the ordinary operation. This operation is indicated when there is extensive suppuration, and in cases where the milder operations fail to effect a cure. In any of these operations great care should be taken not to puncture the cerebral wall.

The after-treatment consists of irrigation by warm boric acid solutions, followed by protargol in solution of about 5 per cent., or as strong as can be used without causing undue pain.. Among the instruments recommended for the operation are a small circular saw driven by a dental engine, which enables one to follow the incision in the line desired without shattering the bone. It is especially useful in saving the rim of the orbit. Dental burrs or nasal trephines may also replace the gouge or curette with advantage in some cases, as they are much better under the control of the operator; Krause's bent trocar is an essential aid. I have to report four cases, each illustrating one of the phases of this disease.

CASE 1.— Mrs. B. E. called on me with a history of catarrhal trouble confined largely to one side, which was of about three months' duration, though it had been much worse for two or three weeks. The affection had been exaggerated by chilly or damp weather and was attended at the time I first saw her by pain across the bridge of the nose. I found the middle turbinated body of the left side much swollen, with purulent secretion coming from the middle meatus. I made a diagnosis of suppurative inflammation of the frontal sinus. She was given a spray of a saturated solution of boric acid to keep the nasal cavities clean, and a 4 per cent. powder of cocain to reduce the swelling. The latter gave her great relief. The treatment continued for eighteen days, when it was noted that she had perfectly recovered. I have on several occasions since this first attack seen this patient when she was suffering from an acute frontal sinusitis without suppuration, but all attacks have been of short duration.

CASE 2.—Mrs. W. L. M. came to me complaining of supra-orbital pain and symptoms indicative of empyema of the antrum of Highmore. Her trouble had begun about six months previously. At times the supra-orbital pain would be severe for two or three weeks and then entirely disappear, but usually she had pain every forenoon, coming on about 10 o'clock and lasting for three or four hours. Upon examination I found free purulent discharge from the middle meatus of the left side. She told me that the antrum had formerly been diseased, but was now entirely well. She was given various antineuralgic remedies with but little relief. Monochloracetic acid was applied to the swollen tissues in the nares, and she was given mild antiseptic and astringent sprays to use at home, with a powder containing 3 per cent. of cocain and 25 per cent. of iodol. A portion of the middle turbinated body was cut away, which gave comparatively free discharge from the frontal sinus, after which she gradually improved. She continued the personal treatment faithfully, making the applications herself two or three times a day, and occasionally visiting my office. At the end of ten weeks I find it noted that she had been improving

steadily and that there was much less discharge, while what did come was nearly all mucous. There was no longer any large accumulation as had been present at the beginning of the treatment. But two months later I find that there was renewed suppuration of the antrum of Highmore, which necessitated a permanent opening. In the meantime the suppuration of the frontal sinus and the ethmoidal cells had increased. The cocain was used sparingly, but astringent and antiseptic sprays were continued and the disease dragged along altogether between three and four years. Sometimes it was hardly perceptible, while at others there was considerable discharge and supra-orbital pain, but finally the patient recovered without opening the frontal sinus, an operation to which she would not consent.

CASE 3.—Mr. S. M. H. came to me with a history of having been attacked, something over a year previously, with very severe pain in the frontal region of the right side. He had been told at that time that he had a polypus in the nose. He had received various internal and local treatments, and had considerably improved at the end of five weeks, but for several years previously he had been annoyed by considerable catarrhal discharge from the nasal cavities, and this had been aggravated since the beginning of the pain above the right eye. I found the lower portion of the left naris normal, but the middle turbinated body was pressing against the septum. The middle meatus of the right side was filled with polypi and purulent secretion and the body pressed against the septum. The inferior portion of the naris was normal. A diagnosis of suppurative ethmoiditis was made, to which was subsequently added the diagnosis of suppuration of the frontal sinus. The right antrum of Highmore finally became involved and it was necessary to make a permanent opening. This patient was under my care off and on, seeing me from once to twice a month or less frequently for a period of something over ten years. During the time various antiseptics and detergent sprays and washes were used for the nose, together with antiseptic and astringent powders. The suppuration of the antrum healed, the polypi were all removed, the middle turbinated body of the right side was removed and for several months, at the infrequent intervals when I saw the patient, the frontal sinus was washed out with a mild solution of peroxid of hydrogen and boric acid. The patient developed marked arteriosclerosis with distinct signs of atheroma of the aorta, and frequently suffered from rheumatic pains. He would never consent to a radical operation on the frontal sinus. All of this time the suppuration in the frontal sinus continued. On September 25, last, I injected into the frontal sinus, by means of a long silver nozzle attached to a large hypodermic syringe (see cut), about a dram of a 10 per cent. solution of protargol in warm water. The opening was large enough so that all of this could escape within a few hours at most, but it gave the patient a severe headache which lasted all day. Four days later I applied, in the same way, about the same amount of a 5 per cent. solution of protargol, and this application was repeated once in from three to four days, five times, when a 7 per cent. solution was applied, but this gave him severe pain. I then applied the 5 per cent. solution again, and at the next visit, thirty-five days after the first application, and when it had been applied only nine times altogether, it is noted that there is very little muco-pus coming from the frontal sinus. The 5 per cent. solution was applied two or three times more, after which I was never able to detect any purulent discharge, though a little mucus was usually found near the opening of the canalis naso-frontalis whenever I saw him, at intervals of about a week. It was found that even the 5 per cent. solution caused too much pain, and I was obliged to reduce the strength to 3 per cent. The remedy appeared to check the suppuration entirely in a sinus where empyema had been present over ten years. This was within a period of two months. Nevertheless, neuralgic pains still occur daily over the orbit.*

CASE 4.—Mrs. B. J. K. came to me with a swelling in the supra-orbital region, extending to the root of the nose. This was ovoid in shape and about one-half inch in thickness at its most prominent part. From the history the trouble appeared to have begun about four years previously. She complained, during this time, of severe supra-orbital pain. She stated that she had had a considerable nasal discharge all of her life. On examination I found the left naris normal and the right free, excepting that the middle turbinated pressed against the septum. There was no apparent discharge. She told me that she had had some polypi removed about eighteen months previously. I made a diagnosis of empyema of the frontal sinus and recommended an external opening with free drainage into the nose. Dr. Bevan made an opening extending from the root of the nose up into the eyebrow of both sides. The sinus was opened and we found a large cavity, fully an inch in its antero-posterior diameter and extending laterally about three inches. There was no septum between the two sinuses and the posterior bony wall had also disappeared so that the pulsations of the brain against the dura were marked. The cavity was packed with iodoform gauze and the wound closed, excepting at the root of the nose. A week later I gave the patient an anesthetic again, and with my little finger in the right naris passed a bent Krause trocar 6 mm. in diameter from the lower portion of the frontal sinus into the nasal cavity. Through this I introduced a drainage-tube, funnel-shaped at the top, with a flange at the bottom and an internal diameter of about one-eighth of an inch (see cut). The cavity was washed out daily, and as this part of the treatment had to be left largely to the patient, I decided to keep the opening in the forehead patent, for it was impossible for her to wash it through the naris. A few weeks later I introduced into the opening in the forehead, a drainage-tube such as I employ in the treatment of empyema of the antrum of Highmore, with a flange at each end. The end of this tube was kept covered with cotton when she was not washing out the cavity. Peroxid of hydrogen, boric acid and various other antiseptic and astringent washes were employed, and equal parts of boric acid and iodoform were insufflated into the sinus daily for months. There was no possibility of obliterating the cavity, therefore this treatment was continued for about a year, when I had the satisfaction of noting that there was very little, if any, purulent discharge. In the meantime the drainage-tube, notwithstanding the flange at its lower end, had worked up into the frontal sinus and had to be removed through the small opening in the forehead. Another tube with a larger flange was introduced, but this also worked out after five or six weeks. I then introduced a longer tube with a flange at the upper end only, which was to prevent it from falling down into the nose. The lower end of this tube came down to the floor of the nasal cavity. This tube kept its position very well, though on two occasions I found that it had nearly crawled into the frontal sinus. It did escape into the sinus at the end of sixteen months after the operation, but by this time there was little, if any, purulent discharge, and the canal into the nasal cavity, which was about 4 mm. in diameter, appeared to me to be sufficiently free to allow the withdrawal of the tube. During the treatment considerable granulation tissue had to be removed from the right naris. When I last saw the patient, seventeen months after the operation, there was no distinct suppuration in the frontal sinus, though there was a very small amount of muco-pus which readily discharged into the right naris. At this time, and once a month previously, I used a 5 per cent. solution of protargol, and she was given the same to use at home as a wash. The external opening, about 8 mm. in diameter, was still maintained and she preferred not to have it closed until all secretion had ceased. I have not seen the patient for the last seven months.

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* This patient was seen again after an absence of about three months, and there was no discharge whatever from the frontal sinus; indeed, the nasal cavity was perfectly healthy.

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ANOMALIES OF THE FRONTAL SINUS AND THEIR BEARING UPON CHRONIC SUPPURATIVE SINUSITIS.*

REDMOND W. PAYNE, M.D.

SAN FRANCISCO.

My experience with chronic suppurative disease of the frontal sinus has been so unsatisfactory, regardless of the method of operation adopted, that I determined to find, if possible, where the fault lay. The necessity for this investigation was doubly impressed upon me from the fact that I found my colleagues in practice were likewise having the same experience with their cases. I speak now only of those old cases of chronic suppurative disease with rather free drainage of the inflammatory products into the nose, and of the small percentage of these where there is retention of the inflammatory products. Recent cases are readily handled by almost any one of the extranasal methods adopted, but when the process has been of long duration and every recess of the sinus has become involved, the whole lining membrane pyogenic, and in places gangrenous, and, in very old cases the bone itself involved,

Fig. 1.—Although our standard authorities usually refer to the frontal sinus as varying much in size, the sinus in this case is about that usually shown in most drawings and demonstrations. We are further left to believe the inner plate smooth and the cavity shallow; this is the case even in so beautiful and extensive a work as Deaver's recent "Surgical Anatomy." The right sinus in this case is at least four times the size of the left, very deep, backward as well as downward.

the problem of eradicating the disease becomes exceedingly difficult. Most of these old cases, as I have said, drain rather freely into the nose, producing no other discomfort, as a rule, than the discharge of pus into the nasopharynx or the development of polypi and other nasal conditions. The rule is that the process has gone on for a number of years, and the patient consults us for the relief of these nasal and the nasopharyngeal conditions, little suspecting that the source of the trouble lies in the frontal sinus, hence any operative measure directed toward the frontal sinus should be with the purpose of completely eradicating the disease found there and not simply providing for freer drainage. To do this requires that every recess of the sinus be reached, all diseased tissue curetted away and, if the lining membrane has become gangrenous, then its entire removal and the obliteration of the cavity. I

* Read in the Section on Laryngology and Otology, at the Fifty-second Annual Meeting of the American Medical Association, held at St. Paul, Minn., June 4-7, 1901.

have not found it possible to do this by any operation short of removing portions of the anterior plate and exposing the whole field. Any attempt to treat such cases through the infundibulum has always appeared to me very dangerous, and certainly very unsurgical, and would always be condemned if we but recalled the the structures with which we were dealing, the exceedingly thin internal plate and orbital wall and the pinhole caliber of the ducts through which we expect to

Fig. 2.—In this case we have three distinct sinuses, the right one much larger than the other two. The walls exceedingly thin, in fact, there is no part of the internal plate which one can not see through very readily. The floor of the right leads at once to the superior opening of the infundibulum; the middle and left sinuses lead through two separate and distinct, though very tortuous, compartments to the superior opening to the left infundibulum.

get drainage. Intranasal methods by which an opening is forced through the floor of the sinus only provide freer drainage and can accomplish nothing else. Through such an opening one can reach but a very small part of the diseased cavity, and that very uncertainly.

Jansen's operation for the removal of the orbital roof and Walker Downey's plan of closing the original wound

Fig. 3.—This is an example of the great depth posteriorly, to which some of these sinuses reach, extending backward over the roof of the orbit almost to the optic foramen; note also the exceedingly thin orbital plate, roof of the orbit, and floor of the sinus, in this case as thin as paper; note further that this extension of the sinus backward is divided into two cavities by a thin vertical septum running across its center.

and bringing the gauze out through an opening made at the internal canthus both threaten cicatrices which may seriously deform the lid, especially if the wound is to be kept open any length of time.

I will not touch upon the various means of arriving at a diagnosis of old suppurative disease of the frontal sinus, except to say that the only positive one is by making an exploratory opening, an incision in the line of the eyebrow, extending from the root of the nose outward. Only a small opening in the anterior plate is necessary, and if a suppurating sinus is found I have come to believe a modified Kuhnt's operation best, where, instead of removing the whole outer plate so radically, which always leaves more or less of a depressed scar, I make successive openings, exposing every part of the sinus and leaving bridges of bone to support the skin. Another modification I find very necessary is to leave two openings, one at the external as well as one at the internal angle of the wound. This provides for very free irrigation. The external opening must be placed at the limit of the external angle of the sinus. If the cavity is large and the disease of long duration permanent drainage is secured by making a large opening into the nose along the line of the infundibulum, and the recesses of the cavity wiped over with a 20 per cent. solution of chlorid of zinc. The two external wounds which were left for irrigation are closed in from five to six days, the edges freshened and brought together carefully with a trifling scar. Care should be taken to have the patient avoid blowing the nose for two weeks after final closing of the external wound.

My results have been much better since following this plan. Every recess and diverticulum, however, must be reached. I have found it necessary to have made curettes of various sizes, on shanks of varying

Fig. 4.—This is another example of a very deep sinus extending backward almost to the apex of the orbit, and with exceedingly thin walls; note that this sinus is divided into four distinct compartments from before backward, by three thin vertical septa running across the sinus from side to side.

lengths and angles, in order to reach every point. The necessity of this detail will be readily appreciated by referring to the photographs I present of the many anomalies of the sinus which one may have to deal with in such cases. These anomalies may also account for our failure to eradicate the disease in certain instances.

DISCUSSION ON PAPERS OF DRS. INGALS AND PAYNE.

DR. EDWARD T. DICKERMAN, Chicago—I have recently completed a series of sections of the frontal sinus and the naso-frontal passage, the results of which may be of some diagnostic value. These sections were made upon 50 heads, or practically 100 naso-frontal passages. In about 40 per cent. of the cases the infundibulum ended practically in the naso-frontal canal. In 60 per cent. of the cases the opening into the frontal sinus from the nose lay in a plane internal to the infundibulum and in the majority of cases, was practically an ostium. In three cases there were found to be no frontal sinus on one side, there being only an indication of it in the way of a very small anterior ethmoidal cell. In one case there was no frontal septum, one large frontal sinus occupying the place of both. One other section was very interesting to me. The right frontal sinus had two distinct openings, one opening being the normal naso-frontal passage, while there was also a tortuous canal leading into the left nasal cavity. In two cases there was direct communication between the frontal sinus and the maxillary antrum. These points are all of some importance in diagnosis of infection of this sinus and in the treatment of them.

DR. CASSELBERRY—In what proportion of cases was there a perforation of the frontal septum?

DR. DICKERMAN—In 2 per cent. was there a direct communication between the frontal sinuses. In 1 per cent. there was an absence of the frontal septum, and in three cases the frontal septum consisted in part of a membrane only.

DR. E. FLETCHER INGALS, in closing—I wish the gentlemen would read the parts of the paper that for lack of time I was forced to omit, as the subject is of great interest. President Harper, of the University of Chicago, told me of an acquaintance who said that whenever he wished to learn anything thoroughly he wrote a book on the subject, and I have had a similar experience in preparing this paper.

DR. R. W. PAYNE, in closing—We are all familiar with chronic suppurative diseases of the frontal sinus, and no doubt many of us have had failures whatever the method adopted for its cure. The investigation I made brought out a number of anomalies that explains the very deep recesses we find in many cases, and which we do not reach unless the operation is very radical and every corner of the cavity explored. These anomalous cavities and recesses also probably account for most of our failures in old suppurative cases.

ASTHMA AS A RESULT OF NASAL CONDITIONS.*

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The frequency of asthma as a result of a diseased nasal condition has so often been brought to my notice that I feel hopeful of effecting a cure in every case of this distressing malady that consults me. Unfortunately, I am occasionally disappointed, but only in a small minority of my cases. I will not go into the pathology of the disease, but will report the results obtained in selected cases not previously reported. I have found that cases of asthma in children under 10 years of age have, after the removal of the offending adenoids, given the best results.

While we, as rhinologists, know what a normal nose ought to be, we are not aware of the exact amount of deviation from the normal which may exist without discomfort in any given case. I find that it is difficult in many cases to know just what is the offending point within the nasal chamber. A deviated septum, hypertrophied turbinate, septal spur, or polypi individually or grouped, are at times the source from which the trouble arises. In cases of asthma it is my practice to remove all pathologic conditions and abnormalities. I have nothing new to offer in the matter of technique. The snare, curette, knife and saw are used in appropriate cases with equally good results. I have almost entirely put aside the galvano-cautery in nasal work. Suprarenal capsule extract, and its newer preparation, adrenalin, make the field of operation practically bloodless, and with ordinary surgical care and cleanliness my results are more satisfactory with the cutting instruments. The usual slow-healing ulcer and frequent irritable scar tissue of the cautery are avoided.

Prof. William Osler, of Johns Hopkins University, says: "Still physicians must acknowledge the debt which we owe to Voltolini, Hache, Daly, Roe and others, who have shown the close connection which exists between affections of the nasopharynx and many cases of bronchial asthma." Granting that asthma be due to vasomotor paresis and bronchial spasm, and admitting the alteration of the nerve centers with predisposition to nervous disturbance in the bronchial region, it is fair to assume that nasal as well as other forms of peripheral irritation may reflexly produce the asthmatic paroxysm. The irritation within the nose may be brought about by inflammatory pressure on the terminal nerve filaments in the mucosa, or may be due to turgescence of the erectile tissues caused by transmitted vasomotor alterations from distant parts of the economy.

There is nothing peculiarly pathognomonic in the symptoms or physical signs of nasal asthma, the paroxysms being identical with those due to other lesions. In the search for the underlying cause of the bronchial spasm, eliminate cardiac trouble, renal disease, gastric and intestinal disturbances, chronic bronchitis, rheumatism and gout, "then examine the nose."

My experience is in keeping with Bosworth, Kyle and other authors, that a large majority, if not all, cases of asthma, are due to some lesion in the nasal cavities. Because all cases of asthma are not cured by the removal of all diseased conditions and abnormalities discovered in the nasal chambers, we must not necessarily conclude that this is not the offending organ. We frequently find polypi that we can not remove, and more frequently, undoubtedly, we fail to discover abnormal conditions. I have a patient, a lawyer, aged 37, who had suffered with asthma from childhood, seldom a week passing without a severe attack. I removed several polypi, giving great relief. He continued to have slight attacks, until I removed a small septal spur, which effected a complete cure.

Anna C., aged 14, had suffered from asthma for nine years, the attacks being severe and frequently lasting for three days. The removal of profuse adenoids by the curette, and a septal spur with the saw, brought about a complete cure of her asthma, and a very rapid improvement in her general health. Her parents say she has grown more in the past year than in the previous five. Her mother stated that the first attack of asthma followed a "broken" nose, caused by a fall from a swing. I have found that a very rapid improvement in the general health of all children followed their relief from asthma.

H. L. G., aged 54, consulted me for asthma, examination revealed a greatly enlarged turbinate, pressing against the septum. He has been cured for nearly two years by the simple operation indicated.

I am sure that as our technique and methods of examination improve, our results in asthma will be greater. The simple operative methods we outline give permanent cure to a majority, and relief to a great number of others.

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DISCUSSION.

DR. G. N. JACK, Depew, N. Y.—I have done a great deal of special work along this line and I have yet to find a case of nasal asthma. That is to say, I have yet to find a case of asthma that was due wholly to any nasal complication. It has been my experience that the etiologic factor in asthma lies in the blood. The nerves and lungs take no part in any of the phenomena of asthma other than in the performance of their physiologic function. I have found three pathological lesions in the blood that will produce asthma, namely lymphocytosis, the asthmatic leucocytosis, and the anemic variety. Each of these three different blood dyscrasias produce distinct types of asthma, and there I think is one of the causes of so much complication and doubt in regard to the subject of asthma.

* Read in the Section on Laryngology and Otology, at the Fifty-second Annual Meeting of the American Medical Association, held at St. Paul, Minn., June 4-7, 1901.

Asthma due to lymphocytosis is a variety of asthma chiefly found in children, especially nurslings, and the blood count in all the cases I have investigated has shown a decided lymphocytosis. In one case the blood count showed 93,500 white cells, 70 per cent. of which were lymphocytes, and a vast majority of these lymphocytes were small, showing that they had come directly from the lymph channels and the chyle. The reason for the dyspnea in this variety of asthma is twofold: 1. A sufficient amount of oxygen can not reach the lungs, owing to the narrowed respiratory tubes, including the pharynx, larynx, trachea and bronchi, due to the collateral engorgement of their lymph channels. 2. The oxygen that finally reaches the lungs is handicapped in reaching the hemoglobin in the blood, owing to the hemoglobin being so thickly surrounded by lymphocytes.

Local treatment may do some good, but systemic treatment will do most good. The leucocytic variety of asthma I have found chiefly in adults and it usually starts from an intestinal indigestion and toxemia which cause a toxic leucocytosis, and an enlargement of the glandular structures of the larynx and trachea.

The glandular enlargement first appears in the larynx and is usually most pronounced during an attack following a long period, perhaps months, of freedom and not infrequently this enlargement will manifest itself in the patient weeks before an attack through the snugness of his collar and change of voice.

When the attack first begins, the obstruction and wheezing is confined entirely to the larynx. After a few days the laryngeal glands undergo a revolution and softening and the laryngeal dyspnea disappears, with the expectoration of mouthfuls of thick, viscid mucus containing Curschmann's spirals, leucocytes and eosinophile cells. There has always been a doubt as to the origin of Curschmann's spirals. They always appear in the sputum first exuded in the leucocytic variety of asthma, whether this sputum comes from enlarged laryngeal or tracheal glands, but owing to the fact that they appear in the sputum coming from the enlarged laryngeal glands *before* the process has extended further down, proves conclusively that they do not in any case originate in the smallest bronchioles as their casts, as heretofore supposed. The anemic variety of asthma we find chiefly in the extremes of life. It comes on night after night simply from the lack of the action of sunlight on the blood. There is an individual peculiarity of the anemic asthmatic. The dyspnea is not alone due to the small amount of hemoglobin in the blood, but also to the fact that the hemoglobin does not readily absorb or carry oxygen, and this is in fact due to a deficiency in animal magnetism. The lack of the chemical effect of sunlight on the blood often proves to be the last straw. Altitude, by increasing the blood count, will in this variety effect an immediate cure.

DR. CASSELBERRY—I would like to know in which class the Doctor would place the asthma found in connection with hay fever?

DR. JACK—I think there is a close association between hay asthma and the leucocytic variety of asthma. I have in many cases found a leucocytosis in hay asthma, and I am of the opinion that pollen dust will, in susceptible cases, produce a leucocytosis sufficient to bring on an attack of asthma.

DR. EMIL AMBERG, Detroit—Blood counts have been made in cases of adenoids and it has been seen upon investigation that after an adenoid operation the conditions of the blood became more favorable. If merely the toxic effects in the blood were to account for it we should not expect this. If the symptoms appear to be due to mechanical obstruction and if the removal of the adenoids improves the symptoms, we may as well come to the conclusion that the mechanical obstruction furnishes the cause and that the changes in the composition of the blood must be regarded as the effect, and not vice versa.

DR. J. F. BARNHILL, Indianapolis—I should like to ask the gentleman, who had the floor before the last speaker, in what specialty he is practicing and from what field he has made his observation. I make that query because rhinologists have given long lists of cases in which they have cured asthma by operation alone. Some time ago I wrote to the professors of medicine in each regular college in the west, asking whether, in his experience, asthma had ever been cured by internal medicine alone, and there was in every instance a negative response.

DR. JACK—I am in general practice.

DR. J. H. FARRELL, in closing—It is all very well to go into the discussion of the blood in the production of asthma, but facts are very stubborn things. In my experience, as well as in the experience of men of longer practice, cases of asthma are often cured by operation. When in general practice I saw many cases of asthma, but I never saw a case in which the attack could not be cut short by the hypodermic injection of ¼ gr. of morphin, and 1-100 gr. of atropin. In Arizona I saw many cases, but I never saw a case cured by the change of climate, except such as we could attribute to the absorption of inflammatory conditions in the nasal chamber.

AN UNUSUAL ANOMALY OF THE FAUCIAL TONSIL.*

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The patient was a woman, 60 years old, who reported that her throat had been paining her for the past two years, and that for a long time, almost as long as she could remember, she had had more or less discomfort in the region of each tonsil. The right was found to be somewhat hypertrophied, and she had pain running to the ear from this region. She did not at first want the tonsil removed, and was treated for some weeks with chromic acid applications. This was followed by some improvement in the sensation. Later she consented to the removal of the right tonsil; the left one was not large. On applying a tonsillotome I was surprised to find that I was unable to cut through the tonsil, and on examining with the finger found that a bony mass penetrated the tonsil almost to its outer border. This was removed with a stout bone-cutting forceps, and on being examined was found to be a portion of the styloid process, the center of the bone showing a distinct marrow. I examined the other side with the finger, and found that, though not so prominent, the tip of the process could be felt through the left tonsil as well.

Not having seen any literature in reference to anything of the kind, I wrote to Dr. Thomas Dwight, professor of anatomy in Harvard University, in regard to the matter, and received from him the following reply:

"Your case is a very interesting one. I do not remember of hearing of a styloid that touched the tonsil, and yet I have not the slightest doubt that you had to do with a styloid, and the explanation is simple enough. Long styloids are not uncommon; and remarkably long ones are due to the ossification of the stylohyoid ligament. On its way to the lesser horn of the hyoid it must pass very close to the tonsil. There is in the museum a skull in which this is ossified throughout, though, I think, with one interruption on each side between the skull and the hyoid. I saw to-day a temporal bone with a styloid, the point of which was nearly two and one-half inches from the lower border of the external auditory meatus. This must have reached to the level of the tonsil.

"It is perfectly in accord with all we know of the process of growth of organs, that if a bony structure should encroach on the domain of adenoid tissue the latter should, so to speak, fold itself around it."

* Read in the Section on Laryngology and Otology, at the Fifty-second Annual Meeting of the American Medical Association, held at St. Paul, Minn., June 4-7, 1901.

If any member of this Section, or any reader, has seen anything similar, I would esteem it a favor if he would inform me as to the circumstances of the case.

THE EFFECT WHICH THE SO-CALLED CATARRHAL DISEASES OF THE NOSE AND THROAT MAY HAVE UPON THE GENERAL HEALTH.*

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> Myself when young did eagerly frequent
> Doctor and saint, and heard great argument
> About it, and about; but evermore
> Came out by the same door wherein I went.

Thus sings that old cynic Omar Khayyam, and Omar's criticism of theologic discussions applies with more or less force to medicine. It is so much easier to accept an explanation already made, than to think about the reason for ourselves, that what argument we hold is likely to be about the details or variations of already existing theories, without much inquiry whether they may be right or wrong. The explanation of any local disease which we do not thoroughly understand, and therefore fail to treat successfully, is simplicity itself. We say, with many variations of the wording perhaps, that it depends on the state of the general health. This explanation is very satisfactory to the patients and their friends, and it saves the physician the labor of finding the true cause for the condition. We are rarely very definite in our statements as to what the condition of the general health may be, and when we do come down to particulars, we are quite likely to think that the patient has the then fashionable disease. Fashions change in disease as they do in dress; just now the uric acid diathesis is a prime favorite; a few years ago it was congestion of the portal circulation.

In the treatment of disease of the nose and throat, we constantly meet with the explanation that the local disease depends on some disturbance of the general health. This has been so often and so confidently asserted, and so generally accepted, that it may seem too radical a statement to make, that the diseases of the nose and throat are not often caused by general conditions, and, further, that they are often the cause of the very state of the general health, which has been supposed to produce them. The exceptions to this statement are, syphilis, tuberculosis, rarefying osteitis, and some of the rarer forms of disease. The acute exanthematous diseases, as well as pneumonia and influenza, have not been considered because the involvement of the nose and throat is a part of the general infection. Certain conditions, as anemia and lowered vitality from whatever cause render the tissues more vulnerable, and other conditions which produce congestion, as indigestion, constipation, menstruation, may and often do cause an exacerbation of an already existing disease. This statement of the position which the state of the general health occupies as a cause of local disease, is perfectly consistent with the idea of the bacterial origin of the acute diseases of the nose and throat, and we have every reason to consider most of the so-called catarrhal diseases the sequelæ of the acute attacks. If we believe, as all progressive physicians to-day do, that most acute and many chronic diseases depend on germ infection, then the relation of the diseased conditions of the nose and throat becomes of the utmost importance.

Assuming the infectious origin to be accepted, the question then is: In what way do the bacteria gain entrance to the system? The principal ways in which this takes place are through wounds, or through the respiratory, digestive, or genito-urinary tracts. Of these different routes of infection, we will consider only the respiratory. During normal respiration through the natural passages, Nature has thrown up a barrier, which not only prevents the entrance of the bacteria to the deeper parts of the respiratory tract, but warms and moistens the inspired air as well. When this barrier is rendered inoperative by disease, or by nasal obstruction, the throat and lungs are exposed to the danger of infection. If, in addition to this loss of function of the nasal mucous membrane, there is a constant discharge of mucus or pus into the pharynx, the probability that the general health will be affected is very much greater. The effect that diseases of the nose and throat have upon the surrounding parts, as the ears, eyes, larynx and bronchial mucous membrane, and as a cause of headache, is a well-recognized clinical fact. If we attempt to analyze the different ways in which disease of the nose and throat may affect the general health, the subject naturally divides itself into two parts, 1, the effect that may be produced by obstructed nasal respiration, and 2. the effects produced by the migration of bacteria or by the absorption of the products of their action.

Under the first division we find those effects which are produced by mouth-breathing, such as anemia from lack of oxygen, disturbances of sleep, aprosexia, maldevelopment of the face if the mouth-breathing is established in early life, and frequent attacks of inflammation of the oropharynx, the tonsils, the larynx, and the bronchial mucous membrane. The effect upon the nervous system, of nasal obstruction, is marked, and varies in different cases through a wide range of symptoms, the most prominent of which are mental dulness, loss of memory, irritability and chorea. The effects produced by mouth-breathing are too common and have been too often reported to need more than a passing mention.

The second division needs more extended notice, because, while the effects may be no more serious, the connection between the local disease and the general condition is more likely to be overlooked. The different ways in which a nasal or nasopharyngeal discharge may affect the general health are: 1, the extension of the inflammation on the surface of the mucous membrane, either to the skin, where it causes excoriations of the skin, or more severe inflammation, as erysipelas, acne, etc., or to the larynx and bronchi, causing in this way protracted attacks of laryngitis and bronchitis. There is no doubt that this extension of the disease occurs, and it is probable that most of the cases of chronic laryngitis not caused by mouth-breathing, depend on disease higher up in the respiratory tract. The bronchial mucous membrane is involved in a large percentage of these cases and, where the bronchitis has this origin, the treatment is unsatisfactory unless the disease of the nose and throat is treated also. An illustration of the failure of treatment directed to the general health, and to the bronchial mucous membrane only, is seen in those cases of winter cough which finally run on to the so-called twenty years' consumption. These patients have usually taken, literally, barrels of expectorants and emulsions, and very few of them have

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ever had any attempt made to control the disease higher up in the respiratory tract. Hajek's statement that it is better for the patients to have the fluid removed from the facial cavities, than to send them from a summer to a winter cure, where the symptoms are lightened, but the disease is in no way cured, is worthy of notice. I can add only that every case of chronic bronchitis should be subjected to a searching examination of the nose and throat, and if disease is found there it should be treated. By doing this, I am certain that many patients can be cured who are now thought incurable.

The second result of a chronic postnasal discharge is the inevitable swallowing of a considerable quantity of this mixture of mucus and muco-pus. That this takes place no one denies, and I am convinced that most, if not all, of the indigestion from which these patients suffer is caused, or at least aggravated, by this cause. Patients who have suffered a long time with postnasal catarrh are often thin, pale, and dyspepetic, and the indigestion is usually rather intractable, so long as the discharge continues. I have seen so many patients who have voluntarily reported that their indigestion was much better as soon as the nasopharyngeal discharge ceased, that I am forced to believe that the swallowing of the secretion has a decidedly bad effect upon the digestive process.

The third effect of the presence of disease in the nose and throat upon the general health, which I wish to discuss, is the migration of bacteria to the surrounding parts and to distant parts of the body. This very important phase of the question has been studied by such men as Ross, Stabell, Otto Seifert, Emil Mayer, Frederick Packard, A. L. Loomis, R. C. Cabot, and many others, who have reported cases of acute rheumatism and endocarditis as direct results of acute tonsillitis. Ziem reports a case of muscular rheumatism which was caused by chronic antral disease, and the disappearance of the rheumatism without treatment after the cure of the antral disease. He also maintains that nasal suppuration may cause abscess of the bones of extremities, or of the joints, and advises examination of the nose and sinuses in all such cases of obscure origin. The fact that a collection of pus in the nasal cavities may be a grave menace in surgical operations is just beginning to be recognized. In this connection H. O. Pantzer says that he believes the septicemia which followed a colotomy in one of his patients had its origin in a nasal disease. This statement is rather a hard one to prove, but it is nevertheless suggestive of a possible source of infection following surgical operations. The fact that migration of bacteria to the surrounding tissues and to distant parts of the body does occur during the course of acute and chronic disease of the nose and throat, has been established by such a number of observations of the leading men in the profession, that it seems hardly necessary to multiply proofs. This migration probably takes place in one of two ways, either through the lymphatic system or through the blood circulation. The first of these routes is the more common, the infection following the flow of the lymph current and causing in this way the involvement of the surrounding tissues. Infection of the lymph current may also be the source of the contamination of the blood current through the anastomosis of the lymph channels with the venous circulation: this will be alluded to later, when we come to consider the infection of the blood circulation. It is possible that infection can take place against the lymph current, but I have never observed it, and I think it not probable. The swollen tissues and enlarged glands of the neck, during the course of acute and chronic diseased conditions of the nose and throat, are illustrations of the migration of the bacteria by the lymph current, that all are familiar with. I wish in this connection to call attention to the purulent rhinitis of children as a source of infection causing cervical adenitis. I went fully into this subject in an article in the *Boston Medical and Surgical Journal* of Jan. 10, 1901. The second route of infection, that through the blood, is more rare, and occurs through the anastomosis of the lymph channels with the venous circulation, through the erosion of a small blood-vessel, which is in contact with the pus collection, or through venous thrombosis, in the same way as a thrombosis of the lateral sinus occurs in mastoid disease. When the infection has once gained access to the blood, it does not differ materially from infections from other sources. The quantity of the infective material from the nose and throat is perhaps not so large as that from other sources, but in other ways it acts the same.

The fourth way in which diseased conditions in the nose and throat may affect the general health is by the absorption of the toxins which are the result of bacterial life. This subject is so intimately connected with the actual migration of bacteria, that it is often impossible to determine which has actually occurred, except by the progress of the resulting disease. The diseases resulting from the absorption of toxins are generally of shorter duration than are those which are the result of the migration of bacteria, but the depression is, perhaps greater in the toxemia. When toxins are absorbed every secreting surface in the body participates in the effort to excrete them, and from this participation we obtain a variety of diseases, that apparently are not related, but which in reality have the same source. Many of the transient cases of acute rheumatism, of nephritis, of pericarditis and of pleurisy following the acute inflammations of the nose and throat are examples of this effort of the system to free itself from toxins. Of equal and perhaps greater importance is the condition of chronic sepsis from which many of the patients with chronic purulent disease of the nose suffer. They are marked examples of the condition of the general health, which is supposed to cause nasal catarrh. If we found a collection of pus in any other part of the body, associated with this condition of the general health, we should, and rightly, assume that the patient had sepsis as a result of the pus absorption, but when we find precisely the same condition in connection with a purulent collection in the nose, we put the cart before the horse and say that the state of the general health is the cause of the purulent discharge. I have not considered the functional nervous accompaniments of the diseases of the nose and throat, the so-called reflex nervous systems, not because they are not real enough and distressing enough, but because it seemed better at this time to limit our inquiry to such diseases as had a definite pathologic basis. The field which I have attempted to cover is so far-reaching that it is impossible to more than call attention to a few salient points, and it is only by the reported observations of those who are interested in the subject that we shall be able to judge the extent of the subject. Enough has already been done to show that the acute and chronic diseases of the nose and throat are a grave menace to the general health, and that they may also be a source of infection in surgical operations. The conclusions to which I wish to call attention are:

1. Diseases of the nose and throat affect the general health through obstructed nasal respiration, or by extension of the diseases of bacterial origin.

2. The diseases of bacterial origin affect the general health: *a*, by extension upon the surface membrane; *b*, by the migration of bacteria to surrounding tissues or to distant parts of the body; *c*, by swallowing of the discharge; *d*, by the absorption of toxins.

3. The migration of bacteria takes place through the lymph current, or through the blood.

4. Septic infection originating from disease of the nose and throat does not differ materially from infections from other sources.

5. Much of the indigestion from which these patients suffer is caused or made worse by the swallowing of the secretion.

6. A condition of chronic sepsis may be caused by a purulent collection in the nasal chambers or accessory sinuses.

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DISCUSSION OF PAPERS BY DRS. RICHARDS AND COBB.

DR. W. E. CASSELBERRY, Chicago—I would first refer to Dr. Richards' paper. At the Atlanta meeting a few years ago, Dr. Sterling stated that he would be glad to show in his office three cases of "bone in the tonsil" which he would like to have elucidated. It was suspected at the time that there might be some delusion in the matter and a committee was appointed, of which I was one. Dr. Sterling had tried to make a tonsillotomy in one case and had encountered the bony projection. They were all cases in which the styloid process was rather long and turned in the direction of the tonsil, projecting into it.

With reference to the evil effect of catarrhal conditions of the nose and throat on the general health, I think that side of the subject will bear some emphasis, for we have heard so much on the effect of the general health on local conditions. The essayist has ably supported his contention that local diseased conditions are capable of producing systemic disease, but I do not think that we should therefore decide that systemic disease may not cause or aggravate catarrhal states of the nose. I recall cases, recovering from acute disease or cases that were run down from confinement indoors in which the general debility would seem to have caused vasomotor debility and disturbance in the nose with discomfort from over-secretion and obstruction, which discomforts passed away as the patients regained strength and vigor. In this connection we also recognize the importance of the uric acid diathesis, or whatever it may be called, whether due to uric acid or the alloxuric bases. Treatment directed towards a better mode of life and more active exercise demonstrates that this systemic state has an influence, especially upon chronic pharyngeal and nasal inflammations. That certain systemic conditions do produce local diseases, we need only instance syphilis, which has local lesions in the nose. There are doubtless other constitutional states with local lesions in the nose. The proposition which the essayist demonstrates in his paper is certainly important. The absorption of material from the sinuses produces a systemic state of toxemia which is associated often with an afternoon temperature, and produces anemia; it may even lead to confusion in diagnosis between it and tuberculosis of the lungs. We should be particular to search in all such cases for empyema of the maxillary sinuses. I am convinced that in a large majority of cases of excessive nasal secretion, especially of purulent, there is disease of one or more of the sinuses. Also a state allied to rheumatism may be due to tonsillitis, rather than the tonsillitis being due to rheumatism.

DR. G. V. WOOLLEN, Indianapolis—I have had a very distinct explosion of rheumatism after a slight infection of the nose, following an operation. It shows how readily the system is influenced by the nose. Probably nineteen out of twenty people in this country suffer from catarrh, or catarrh and rheumatism. If any other conditions were so often associated with bad health we would naturally look to local causes. Instead of a cuspidor, I make use of a pus basin and I have frequently tried to estimate the quantity of secretions that are discharged from these cases, who often have no idea that they have any local infection. I have made it a routine practice that patients shall always treat themselves before meals so that they will not swallow these infecting secretions. In consequence I do not use tonics and restoratives nearly as often as I did formerly. I was a general practitioner of twenty-three years before I went into this work, and would be naturally inclined to the general treatment rather than the local, but I have been driven to this conclusion by my observation. If you clean out the nose and head well after meals you will not find nearly so much secretion, showing that it is largely precipitated into the stomach with the food. The relationship between the local condition and the general health is so intimate that there can not be any mistake. I measure all my patients and weigh them repeatedly during treatment: I have found that 90 per cent. of them are under weight. A large percentage of these patients recover their normal weight under treatment.

DR. L. C. CLINE, Indianapolis—I think the class of cases referred to should be separated into groups. We have a certain group of cases in which the nasal troubles are brought about by systemic conditions and that are cured by systemic treatment. In another set of cases the disease is absolutely local and the systemic affection is brought about by the local conditions. If we can separate those cases and differentiate between them we will be much better able to determine the proper treatment. I believe that to operate on every case that comes along is a mistake and we should look a great deal to the systemic treatment of some cases by elimination, giving calomel and salines, and teaching our patients to look after their skin, which is a very important factor in many of these cases. I have repeatedly had cases in which I thought an operation was indicated and necessary, yet by using other measures, such as having them bathe and giving them such remedies as would eliminate retained poisons from the alimentary tract and putting them on a diet, they would recover without an operation.

DR. DUNBAR ROY, Atlanta—I think the tendency with us, like in every other specialty, is that we become too narrow. One gentleman has spoken of routine treatment. I do not believe that all the local conditions in the nasopharynx and the nose are the causes for so many systemic dyscrasias, but every case is an individual one and the treatment that would benefit the case may benefit the systemic condition, but that it would universally do that I do not believe. That cleansing the nose and throat will relieve the systemic conditions mentioned, I do not believe will be found true in every case. Whenever there is a local cause it must be removed; but the idea of any routine method of treating the nose, and cleansing the nasopharynx and nose before eating in every case I think is unwarranted.

DR. O. T. FREER, Chicago—It would be difficult to recognize epithelial cells derived from the nose in the gastric contents. If there is any digestion going on at all the delicate cilia of the nasal epithelium would entirely disappear, and the epithelial cells from the mouth, esophagus and nose would swell so that it would be difficult or impossible to differentiate them from each other or from other cells. As to pus cells coming from the nose—and leucocytes form a large part of the nasal discharge—these would not differ from leucocytes derived from other regions. I think that the effect of disease of the upper air-passages on diseases of the stomach and lungs is apt rather to be exaggerated than underestimated. In Rush Medical College our throat and nose patients are classed with those having diseases of the chest, and we systematically examine the throats and noses of the latter class; yet in spite of our large pulmonary material, especially numerous cases of chronic bronchitis coming under observation, it is not common for us to find diseases of the lungs strikingly associated with those of the upper air-passages.

The number of cases of chronic nasopharyngeal catarrh that improves after correction of gastric difficulty has seemed to me sufficiently noteworthy to suggest some connection between the affections, but only very extensive statistics could establish this as a fact.

DR. P. J. H. FARRELL, Chicago—Where the nasal douche is used in catarrhal conditions, particularly by the general practitioner, damage may be done. In my own work in the last six months I have been called upon to treat a dozen or more cases of middle-ear trouble following the use of one of the many instruments sold for this purpose. On Monday morning, before leaving home, I made a paracentesis on a medical man, which had become necessary as the result of this form of treatment, although I had cautioned him about the use of the nasal douche.

DR. COBB, in closing—The question of the relation of diseases of the nose and throat to general diseases, whether these other conditions cause or are caused by them, is a question that has been frequently thrashed out here. If you were to go to the Section on Gynecology you would probably find that somebody will read a paper on the effect of systemic disease on uterine diseases. Many of those cases are improved by general treatment, but do not get well that way. In fact they never get entirely well under general treatment, if we exclude syphilis. In nasal catarrh we have to deal with a disease caused by poor drainage, and when we improve the drainage the case recovers, but just so long as there is no improvement of the drainage the case does not recover. Such cases may improve, but they will not entirely recover under general treatment, but if you secure drainage from the cavities you will put the patient in a better condition to get well. I have been a firm believer in the uric acid diathesis, but I do not believe that it is the cause of the nasal catarrh from which even a uric acid subject suffers. Indigestion may be accompanied by catarrh and still not produce it. Intestinal absorption of decomposing food may and often does produce a profound and prolonged intoxication and in the effort which every secreting surface in the body makes to throw off the poison, the mucous membrane of the nose and throat participates; but this mucous membrane does not suffer more than mucous surfaces in other parts of the body. One attack of intestinal intoxication does not cause a post-nasal discharge for years afterward any more than it causes a diarrhea lasting the same length of time.

CHANGES IN THE FACIAL BONES DUE TO ADENOIDS.*

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The enormous amount of literature on the subject of lymphatic growths in the nasopharynx that our medical journals have been publishing lately is certainly presumptive evidence that the matter has been well sifted from a clinical point of view. It has, but only in consideration of the effects of the condition on children, under 15 generally. In these cases the assertions of Meyer of Copenhagen, thirty years since, have been thoroughly worked out. The definite connection between habitual mouth-breathing, and mental as well as physical development, has been established.

The peculiar characteristic departure from the composite type of human skulls shown by those who throughout life have had functionless noses is also defined, and as this essay hopes to show, logically.

The bones whose part is the greatest in this change are those making up the hard palate. From the gently rounded curve of the roof of the mouth, that is the normal type, we see extreme examples where the arch is high up and the encroachment on the space of the nares most extreme. The same factor is accountable for a nasopharyngeal space, but little larger than the finger tip of the examining hand, the nasopharynx of a new-born babe in a man.

While the mouth roof elevation has really encroached on space originally intended for nose development, yet to put the blame clearly on the part at fault, lack of development alone, of the upper respiratory tract, is responsible for setting in motion the entire vicious cycle. Although the matter of these changes in shape of the bones and of their relation to space is well known, and the remedy applied more and more generally and effectively by the medical profession, there has been, so far as I have seen, no recognition of the bearing of these conditions by dentists on what is a large field of their work, viz., the straightening of front teeth. If this be true, then work done with this object in view, on children, is a hopeless superfluous infliction in extreme cases, and in all cases can be aided by a properly performed, thorough removal of all blocks to the patulency of the upper respiratory tract before complete ossification. That it can be shown to be true, a consideration of the changes necessarily accompanying the altered direction of growth of the palate processes will demonstrate. This demonstration is simply the fact that the upward extension of the roof tends to bring the sides together. As the regular number of teeth begin to demand their space, they can find it in only one extension, and that is forward. The molars get more of the room available because they do the bulk of the work through the grinding motion given them by the pterygoids. The incisors and canines suffer the crowding and malposition the most because the front is the only way to expand, and also because man has largely passed much need for the prehensile and tearing function they were originally and respectively used for by the progenitors of the human mammal of to-day.

These two considerations will also account equally as well for the same malposition in a forward direction of the front teeth of the lower alveolus, i. e., the mechanical limitation to backward extension and the all-important need of the grinding process of mastication by the molars. It plainly follows that the inferior will be kept in apposition by the pterygoids.

It would seem, then, that attention to this condition in early life would be equally effective in lessening the number of people with prominent front teeth as it is in stopping the mouth-breathing with its accompanying evils, which are as apparent to a medical man as the teeth are to the public.

Without rehashing the well-known picture of running ears, constant coryza, etc., in children, I think I can show that even those who have only a small amount of this tissue, and who apparently get through to puberty with no damage are yet, as these cases will show, to be relieved of ear and throat conditions that have no plain, evident connection with adenoids only by due consideration of the atypical anatomy of the nasopharynx on the lines above set forth.

If, in a first view of the cavity, remnants of adenoids are still present, it is fair to assume their existence in greater amount in earlier life, and independent of elicited history, a minute, detailed examination of their present relations to a normal or abnormal pharyngeal vault is in order. The assumption is based on the well-known elimination of such glands as those composing the tonsillar ring, the thymus, etc., by the organism on reaching the limitation of growth; provided previous inflammations have not produced permanent hypertrophy by metaplastic or direct connective tissue proliferation, a common type of which is the persistent hypetrophied tonsil seen at all ages. Bearing in mind

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these facts the diagnosis of their presence has a relative value beyond the intrinsic.

A case illustrating this would be Miss G., aged 18, in whom the bone conformation was typical and the postnares small—a constant day and night mouth-breather. The removal of a piece of adenoid from its location just above, but close to the postnares was followed by a relief that was entirely out of proportion to the size of the tissue.

A case emphasizing particularly the point of location was Miss G., aged 15, a mouth-breather only at night. In her case the slight encroachment made on the available space by the soft palate when the horizontal position was assumed caused the trouble, because the remaining adenoids were all low down. The nasopharynx above was completely normal, save in roominess.

A case of obstinate salpingitis with hearing reduced to about half was relieved after about a month's ineffectual care, by my being able to get part of a growth with the Gradle guarded forceps not larger than a buckshot, but located above and to the inner side close to the orifice of the Eustachian tube. This was Miss S., aged 20.

It has been of prompt and decided benefit in another instance, Miss F., aged 25, who complained of chronic nasopharyngeal catarrh, to curette the area of most insignificant remnants.

I have been unable to find but the most meager references to it in the works of medical writers in this field. The standard text-book of dentistry that I have also seen failed to demonstrate the development of the alveolar processes with the corresponding dental manifestations in connection with perverted respiration due to adenoid hypertrophy. In fact, the text-books of human anatomy, such as Gray's, are less definite as to the development of the superior maxilla than as to any other facial bones. However, to repeat the fact that the grinding process is the most important demand the race now makes on the teeth, makes the maintenance of the apposition between the upper and lower molars by the pterygoids an assured and necessary fact. The upward growth of the palate is Nature's assurance that the mouth has assumed the added function of respiration thrust upon it. One center of development is, however, well understood; that is, the pre-maxillary that includes the four incisors, and that is the last one to become ossified to the palate process. This late ossification of this center of development is a positive confirmation of the facts expressed above, that the front teeth find space as best they can, and in a forward direction. Their junction to the line of the molars is the last process of the final arrangement. It has been my privilege to see many cases where an adenoid operation would have saved an unsightly physiognomy. The specimen submitted is a typical example, and while a cast of the familiar projecting alveolus, it is not extreme, but was selected from a collection as being a fair average. From the observation I have made in this connection, I feel confident that this anatomic process is developed in this way.

In recapitulating the points I wish to establish as worth the profession's attention, the first is that mouth-breathers' superior and inferior maxillaries, palates, vomers, turbinates, ethmoid and sphenoid bones show an alteration in development as compared with the normal, that I contend is inevitably accompanied by prominence of the alveolar processes in front and misplacement of the front teeth; that due significance should be attached to the recognition of evidence of previously existing adenoids in efforts to locate obscure sources of ear and throat disturbances; and lastly, the relative size of such evidences and that of the nasopharyngeal area, as well as their location, are factors opposing the apparent significance.

The few cases given are only those who were seen previously by other users of the rhinoscopic mirror.

THE DIAGNOSIS AND TREATMENT OF MASTOIDITIS.*

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NEW YORK CITY.

In any case of acute or chronic middle ear inflammation, where there is a collection of pus within the middle ear, there is danger of extension of the inflammation to the mastoid cells. It is a question whether the mastoid is not involved to some extent in all cases of acute middle ear inflammation, as well as in all cases in which a chronic suppuration of the middle ear has existed for a considerable period of time. Naturally this statement is not meant to imply that the mastoid involvement requires any interference on the part of the surgeon, the condition disappearing on appropriate treatment of the middle ear. It is hardly conceivable, however, that in two regions so closely associated and so intimately connected as the pneumatic spaces of the mastoid and the tympanum, one part could be the seat of an inflammatory process without some slight extension to the other.

When we come to the recognition of mastoiditis from a clinical point of view there are certain well-marked signs and symptoms which enable us to make a diagnosis. The symptoms vary somewhat in adults and in children. In adults, the most prominent symptom is severe pain in the region of the mastoid. This may be accompanied by a very profuse discharge from the ear; or the discharge from the ear, which has been previously profuse, may suddenly become diminished, and this diminution in the discharge may be followed by a marked exacerbation of the pain. While pain is a very prominent symptom, it may not be excruciating. In phlegmatic individuals the pain is frequently not described as severe; the patient will simply pass sleepless nights, and on being questioned it will be found that the sleeplessness has been caused by the pain in the head. Prostration is also a symptom which should be borne in mind. It is impossible to have any considerable collection of pus within the pneumatic spaces of the mastoid without having the patient suffer more or less severely from prostration. The temperature is probably the least important guide in making the diagnosis. In some of the most severe cases in adults, which have been under my observation, I have found the temperature absolutely normal for a long period of time. In one case in particular the temperature observations were made every three hours for a period of two weeks. During this time the temperature never rose above the normal standard, yet on opening the mastoid the entire cellular structure was found to be broken down, and the cavity resulting was filled with foul pus. If temperature is present, it is an aid in diagnosis, and renders the presence of a purulent collection within the

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mastoid process probable; if absent, it does not exclude the possibility of a severe suppurative process existing within the bone. What I have said in regard to temperature applies to adults alone. In children, an involvement of the mastoid process, either following an acute inflammation of the middle ear or following an acute exacerbation of a chronic suppurative process is always attended by a rise in temperature. In children, and especially in young children, this rise in temperature may be considerable, the temperature frequently reaching 103 or 104 F., or even 105. It is also noticeable that in child life symptoms of general sepsis develop quite early as a result of mastoid suppuration. While in adults it is rather uncommon to observe a septic curve in the temperature, excepting in those cases which have been long neglected, and where all the signs are very well pronounced, it is quite common in children to find evidence of septic absorption within the first twenty-four or forty-eight hours after mastoid involvement is suspected. Temperature, then, in children is a valuable point in making a diagnosis of mastoid involvement; in adults, it is of but little value, and the absence of temperature should never be taken as an indication that the mastoid is not involved.

Coming now to the physical signs which characterize involvement of the bony structures behind the ear, we have, as I have said, either a very profuse discharge or a history of a previous profuse discharge which has suddenly become less. The reason why I say that a profuse discharge from the middle ear may be indicative of a mastoid involvement is that where an otorrhea has persisted for a long time and where the discharge is exceedingly free, the surgeon must ultimately come to the conclusion that a larger region than the middle ear is inflamed, in order to account for the profuse flow. Those cases which are attended by a very profuse discharge from the tympanum, and where the drainage from the ear seems to be perfectly free, are seldom accompanied by pronounced symptoms; there is very little pain, only moderate elevation of temperature in children, and the attendant notices simply that the patient is becoming weaker and weaker each day, and is gradually losing flesh and shows some signs of systemic infection. Those cases in which the discharge becomes suddenly diminished are usually characterized by slight elevation of temperature in adults and a high temperature in children. These cases are also accompanied by severe pain. The occurrence of facial paralysis during the course of a middle ear inflammation was formerly considered a pathognomonic symptom of involvement of the mastoid, but later experience has taught us that facial paralysis is quite as common in those cases of middle ear inflammation in which there is no mastoid involvement as in cases complicated by mastoiditis. Its presence is, therefore, of no diagnostic value.

Another sign of great importance in determining the presence of this condition is local tenderness. If the mastoid is palpated carefully, pressure being made over the external surface of the bone close to the attachment of the auricle, marked tenderness will be elicited in a very large majority of the cases where inflammation exists. The point of greatest tenderness is usually located immediately over the region of the antrum. It is important in making this examination that the mastoid alone be palpated, and that the palpating finger does not exert any pressure upon the auricle. If attention is not paid to this point, the presence of either circumscribed or diffuse inflammation of the external auditory meatus will cause sufficient tenderness to mislead the surgeon. The palpating finger should be pressed firmly upon the bone, pressure being exerted backward so that the auricle is not moved, and no motion communicated to the fibro-cartilaginous meatus. In this way we elicit true bone tenderness and absolutely exclude any tenderness due to inflammation of the canal. The presence of tenderness over the mastoid tip is not to my mind of great diagnostic importance, excepting in those cases in which a mastoid empyema has ruptured through the internal surface of the process, and the pus has been evacuated beneath the attachment of the sternomastoid muscle. Here tip tenderness is naturally present, but, in addition to tenderness, we have a diffuse brawny swelling beneath the attachment of the sternomastoid muscle. This tumefaction is a much more prominent and important sign than tenderness alone. Tip tenderness in other cases can be practically disregarded. It is always wise, however, to examine carefully the attachment of the sternomastoid muscle to be certain that the mastoid abscess has not evacuated itself in the manner above described. Considerable stress is laid by some upon the presence of tenderness over the mastoid emissary vein. In a rather large clinical experience I have never found this sign to be of any value in enabling me to arrive at a diagnosis.

To sum up, then: Local tenderness is an important sign and is almost always present; the point of maximum tenderness is almost invariably the region of the antrum, tip tenderness being significant only in those cases where rupture has occurred at the tip beneath the sternomastoid muscle.

Otoscopic examination is also of great value in enabling the surgeon to make a diagnosis of this condition. On looking into the external canal in cases where the mastoid is involved, one is immediately impressed by a marked shortening of the meatus on the upper and posterior aspect. The upper and posterior wall of the canal sinks down so as to partially fill the lumen of the meatus, and obscures more or less of the upper and posterior portion of the drum membrane. In certain cases this sagging portion of the canal wall seems to be a continuation of the membrana tympani. In such cases the area of the fundus is much diminished in the vertical diameter. Any bulging of the upper portion of the membrana tympani in cases of middle ear suppuration should always be regarded with suspicion. Bulging in this region, together with sagging of the upper and posterior wall of the canal, as already mentioned, is easily explained on anatomic grounds if we remember that the roof of the external auditory meatus at its inner extremity constitutes the floor of the aditus ad antrum and of a portion of the mastoid antrum.

I have not said anything so far about the presence of tumefaction behind the ear. A fluctuating swelling behind the auricle is usually indicative of mastoiditis, the pus having perforated the mastoid cortex and burrowed beneath the periosteum. At the present day this condition is seldom observed in adults, the cases being recognized at a much earlier period. In infants, a fluctuating swelling in this region is occasionally observed in neglected cases. While always indicative of mastoid involvement, it is not always a sign that the mastoid cortex has been perforated. In young children the pus not infrequently escapes from the mastoid antrum through the aditus ad antrum into the tympanic vault, and then through the Rivinian fissure outward

along the upper wall of the canal until it reaches the external surface of the mastoid. These cases should always be treated in exactly the same manner as those in which perforation of the cortex is present, but the cortex will frequently be found to be intact at the time of operation. Quite different from post-aural abscess is the presence of edema behind the ear. Post-aural edema is, in my experience, much more frequently a sign of a furuncle on the posterior canal wall than of any inflammatory process within the mastoid.

Turning now to the treatment of cases of mastoiditis, the first point to be observed is to put the patient at perfect rest. So soon as there is the slightest suspicion, on the part of the surgeon, that there is danger of mastoid involvement, the patient should be kept absolutely quiet, should be put upon a fluid diet and the bowels freely opened by means of a saline purge. Absolutely free drainage should be established through the external auditory meatus. This is best done by making a free incision through the drum membrane. The incision should begin close to the posterior periphery of the membrane at a point below the tip of the malleus handle, and should extend upward into the tympanic vault. When the vault has been reached the knife should be carried upward and a little backward so as to sever freely the reduplications of the mucous membrane, which are so richly distributed in this region. The knife should then be drawn out on the upper and posterior wall of the meatus for a distance of at least one-eighth, sometimes one-fourth, of an inch, dividing all of the soft parts down to the bone. This incision serves the purpose of not only draining the tympanum freely but causes a marked depletion of the inflamed tissues, and relieves tension along the floor of the tympanic vault and mastoid antrum. After such an incision has been made the ear should be frequently irrigated with a warm antiseptic solution. The warm irrigation cleanses the parts mechanically, and also favors the unloading of the congested tissues. A sero-sanguineous discharge frequently persists for twelve to thirty-six hours after the incision has been made. I think that the value of local depletion thus obtained is often underestimated.

With reference to the abstraction of blood from the external mastoid surface, I am not in favor of the procedure. It was formerly the practice to abstract from one to three ounces of blood from over the mastoid by means of leeches or of wet cups in all suspicious cases, the object being to abort the inflammation. I have never been convinced that this measure is of the least value in averting the involvement of the bone, and it certainly adds much to the discomfort of the patient.

Regarding the local application of cold, much is to be said both for and against its use. Several years ago I was quite an enthusiastic advocate of the local application of cold as an abortive measure in mastoiditis. Further experience has taught me that the results obtained by the use of the ice-coil are in many cases but temporary, and that the evidence of the inflammatory process within the bone is simply masked by the use of cold. It is quite possible that the ice-coil or the aural ice-bag may prevent a further extension of the inflammation to the superficial structures. In many cases I am convinced, however, that where the inflammatory process does not advance in this direction it invades the deeper portions of the mastoid, and often extends through to the lateral sinus or to the middle cranial fossa. In many instances after the removal of the ice-coil, where its action has seemed to be perfectly satisfactory, and where it has apparently aborted bony involvement absolutely, the surgeon finds that in the course of a few days or weeks evidences of mastoid involvement reappear, and upon operation extensive tissue destruction is found to have taken place. I would not be understood as entirely condemning the use of the ice-coil or the ice-bag. In a very limited number of cases which have been under observation from the inception of the middle ear inflammation I believe that the use of ice is justifiable. In cases which have not been under the personal observation of the surgeon until there are some evidences of mastoid involvement, I do not advocate the employment of cold. In all instances where an attempt is made to abort a mastoiditis by means of the coil or of the ice-bag it should be remembered that the cold application should not be kept on for more than forty-eight hours at the longest, and in most instances not longer than thirty-six. In this connection it should be emphasized that when cold is applied it should be used continuously; the coil or ice-bag having once been put in position should be kept there for the entire period of thirty-six hours, only being removed when it is necessary for the surgeon to thoroughly examine the ear. It should also be borne in mind that having once taken off the cold application at the end of thirty-six hours its use should not be repeated. Nothing is more dangerous than to use the ice-coil for twenty-four or thirty-six hours, then remove it because the patient is free from pain, and in a day or two reapply it because the pain has returned. The mere fact that the pain returns is decisive evidence that bony involvement is present, and that operative interference is absolutely essential. The question then arises: "What measures are to be taken in a doubtful case of mastoiditis; in those cases where the tenderness is but slight, where the temperature is of no diagnostic value, and where the pain is only moderate?" I am heartily in favor in these doubtful cases of doing what may be termed an exploratory mastoid operation. If the surgeon feels fairly certain that there is mastoid involvement, or if, on the other hand, he is not absolutely certain that there is not an inflammatory process deep down in the mastoid, I believe that he is perfectly justified in performing an exploratory operation. Such an operation should be undertaken merely for the purpose of exploration, and the position of the surgeon should be clearly defined to the patient. If this plan is followed I am certain that there will be fewer cases of grave intracranial complications following mastoiditis. During the past year I have followed this plan, and can only say that I have never yet opened a mastoid in which I have not found some evidences of inflammation. Fully one-fifth of these cases I would have treated some years ago by means of the ice-coil. The results of early operative interference have certainly been very flattering; the wounds heal quickly, the discharge from the ear ceases, the hearing returns practically to the normal standard, and the time of convalescence is markedly decreased. The general condition of these patients has invariably improved immediately after the operation, and contrasts most favorably with those cases where a suppuration of the middle ear has continued for many months after the use of abortive measures. In many instances this suppuration has continued for an indefinite period. The dangers of the mastoid operation are practically *nil*. Out of 316 cases operated on I have had but 14 deaths. One died of facial erysipelas, 1 of septic pneumonia, 1 of acute nephritis, 1 of diabetes and 1 of marasmus. In all the others intracranial

infection had occurred before the mastoid operation was done, and consequently the fatal termination was in no way dependent on the operation—in other words, there has not been a single death which could be in any way traced to operative interference on the mastoid, whereas the cases in which intracranial infection had already occurred would undoubtedly have been saved if an earlier operation had been performed.

Regarding the particular operation to be performed, this must vary with the individual case. It can not be too strongly urged that any operation in this region must be performed under the most rigid aseptic precautions. The parts about the ear must be shaved, thoroughly scrubbed and covered with a moist bichlorid dressing before the operation. The usual aseptic technique must be observed in keeping the field of operation sterile. All instruments must be sterilized, and careful attention must be given to the cleansing of the hands both of the operator and of his assistants. These precautions are of the utmost importance in exploratory operations as well as in those where pus is known to be present. Even in an exploratory operation I advocate a very free incision. The incision should begin just below the tip of the mastoid, and should follow the line of auricular attachment, to a point above the meatus, being situated about one-quarter of an inch behind the line. The incision should extend through the soft parts down to the bone. All bleeding vessels should be secured with clamps. The anterior flap is then pushed forward by means of a periosteal elevator, exposing the upper and posterior margins of the bony meatus. The posterior flap should be elevated in a similar manner, and the margins of the wound separated by means of retractors. In all operations the surgeon should first enter the antrum as the initial procedure. No matter whether a perforation exists through the cortex, or whether the cortex is intact, the aim of the operator in every instance should be to reach the large pneumatic space in immediate communication with the tympanum. If the operation is done for exploratory purposes, this would naturally be the first step. Given a case where the operator finds absolutely no pus or softened bone in the deeper parts of the mastoid in the region of the antrum, it is not necessary to continue the operation. The upper and lower angles of the wound can be sutured, a small drain inserted into the mastoid antrum and an antiseptic dressing applied, and the case will recover in a very short time. The operation can not but exert a beneficial influence on the suppurative process within the tympanum, the establishment of thorough drainage through the posterior wound causing a quick subsidence of the inflammatory process. Where pus or softened bone is found on exploring the antrum, I then advocate the complete destruction of all pneumatic tissue within the mastoid; all of the cells must be exposed and their walls broken down by means of the sharp spoon. It is of particular importance to remove the tip of the mastoid process. Not infrequently we find, on entering the mastoid antrum, a little softened bone in this region. The remainder of the mastoid may be fairly firm until the surgeon exposes the large cells at the tip of the process, which will be frequently filled with pus. It is not an uncommon experience to find fairly healthy bony tissue between the middle ear and some portions of the mastoid process which are in a very bad stage of caries—in other words, the surgeon, having once discovered softened bone in the region of the mastoid antrum, is not certain to what extent the bone may be involved until he has removed every vestige of cellular structure from the mastoid, and until instruments come in contact with the firm inner table of the skull.

In speaking of the exploratory operation it will not be out of place to mention the exposure of the lateral sinus as an exploratory procedure. All of us have met with cases in which mastoiditis has been suspected and where the surgeon has not been called in until the temperature has become very high, and where there are absolute evidences of septic absorption. If there is any suspicion that the lateral sinus is involved, it is always justifiable to expose this venous channel for the purpose of exploration. If the sinus appears perfectly normal, it is not necessary to open it. If, on the other hand, there is the least suspicion of the presence of a thrombus, the sinus wall should be freely incised, and the thrombus removed. The exposure, or even the opening of a healthy sinus, if the technique of the operator is perfect, does not endanger the life of the patient in the slightest degree. In doubtful cases the exposure of the sinus at the first operation may save valuable time and preserve the life of the patient.

Knowing as we do the fatal results which so frequently follow unrecognized cases of mastoid inflammation, or cases operated on at a late period, I wish to impress on the minds of my hearers the necessity of watching with the utmost care every case of middle ear inflammation where the symptoms are acute. Mastoid involvement may come on so insiduously as to escape observation unless the possibility of its being present is continually in the mind of the surgeon. To wait until symptoms are so pronounced that there can be no question as to the advisability of operation will often mean the loss of the patient's life. I would not be understood as advocating an operation upon the mastoid process as soon as there are any symptoms of a congestion of the mastoid cells; on the contrary, I believe in attempting to abort mastoid involvement by free drainage through the canal. This should always be the first step taken by the surgeon except in cases where there is evidence of perforation through the cortex, or where marked septic symptoms are present. Canal drainage having been established, however, and in the few selected cases an attempt having been made to abort the involvement of the osseous structures by means of cold, the surgeon should not hesitate, if the symptoms do not immediately disappear, to open the mastoid for purposes of exploration. The procedure is not only justifiable, but is indicated, and the surgeon who hesitates when such a condition is present does not do his full duty to his patient. I also wish to bring out the importance of doing a complete and thorough operation in every instance where the mastoid is found to be involved upon exploratory operation. I know it has been my own experience, and I believe it is the experience of my hearers, that the more mastoid operations we perform the more radical is the procedure made. In following up my cases during the last five or six years I find that the period of convalescence is very much shorter where an absolutely complete operation is done, removing all of the cellular structure of the mastoid, than where an incomplete operation is performed. Every vestige of cellular tissue must be taken away if a perfect result is to be secured. The presence of a small focus of diseased bone in any portion of the wound, while it may not necessitate a secondary operation, will certainly prolong the convalescence of the patient. On the other hand, if the operation is thoroughly and completely done, the wound

heals very rapidly, and the patient is saved a long and tedious convalescence.

DISCUSSION.

DR. J. H. HOLINGER, Chicago—We have in the middle ear and the middle ear process, accessory sinuses, namely, the antrum and the different cells of the mastoid. The more postmortems one has made the better he knows that in the acute as well as in the chronic suppurations of the middle ear we find the cells more or less filled with pus. This pus in acute suppurations disappears under two conditions. First these cells are small and the area of absorption of the pus is favorable. However, not alone the size of these cavities is responsible for the quick or slow absorption of the pus, but there is another factor in the character of the epidemic. In some epidemics you find typical involvement of the mastoid, and after three, or four, or five days the inflammation disappears. Again, you have hardly any pain in the mastoid and for three or four weeks the suppuration still persists, slight tenderness persists, and if you operate you will find enormous changes in the mastoid, even though the cells are not necessarily large. The Doctor does not seem to lay stress upon the tenderness of the tip of the mastoid. It is very often found that just at the end of the tip of the mastoid you have one quite large cell. I have operated upon three cases this spring where the mastoid antrum and all the rest of these cells were free, but in the tip of the mastoid there was as much as a teaspoonful of pus under high pressure. If at any part of these cells you have a little isthmus that closes up the communication you will have a considerable cavity. I have found as a regular symptom pain caused by pressure on the anterior half of the mastoid process. I have found it much oftener there than elsewhere. I should like to refer to the use of the sharp spoon that the Doctor advocates. Of course we have to break down the bony walls of the mastoid between the cells, but generally I would not use the sharp spoon in the antrum for the simple reason that you destroy then the mucous membrane that is left. Suppose that you have one or two cells that you do not entirely open, then you will have caused solidification and complete closing of the mastoid antrum and in this way you will possibly leave a cell without drainage. These cells later on are prone to bring on suppuration and a new mastoiditis. I have operated in the last two years twice in such cases in which I found a cell entirely shut off from all communication with the middle ear, and there had been caused in this way renewed suppuration. In one case I had to open the sinus and found a sinus thrombosis that had been caused by one of these cells. Thorough asepsis in a case of this kind is important.

DR. REDMOND W. PAYNE, San Francisco—I would like to ask Dr. Dench what is his method of caring for the wound after the operation. Suppose the operation is so radical as to reach from the antrum to the attic, thus throwing these cavities into one large cavity with the whole bone surface uncovered, does he carry on dressing of the wound and allow the wound to granulate or does he line this cavity with skin flaps provided by slitting up the cartilaginous meatus, etc?

DR. EMIL AMBERG, Detroit—Politzer speaks of the presence of the pus in the mastoid in cases of otitis media suppurativa. We may have pus here, but that does not necessarily mean that we have inflammation of the mastoid cells. I prohibit these patients lying on their back, in order to prevent, if possible, the extension of the inflammation to the cavity. Dr. Dench spoke of prostration in connection with mastoiditis. The Eustachian tube in children is short and the pus may readily go into the stomach and so derange digestion. I differ with Dr. Dench concerning the diagnostic value of the facial paralysis. Trautmann reports that he saw a case in which an exudate in the tympanic cavity caused facial paralysis, and in that case the evacuation of the exudate brought about a disappearance of the facial paralysis, twice. In these cases the facial canal is supposed not to be entirely ossified.

We know that leeches are helpful and that often cold or hot applications are helpful. Whether cold or hot applications may be preferred depends largely upon preference on the part of the patient. It is peculiar that, in similar cases, both cold and warm applications serve practically the same purpose. We know that cold is, to some extent, inimical to the growth of microbes and at the same time the confluence of blood as caused by heat may give better conditions for the resistance of the tissues. For instance, we know that in a certain heart disease tuberculosis is reported as not occurring so often. Another factor which is mentioned only as very hypothetical is the importance of the chemismus of the cell; for example, it is surprising that in incising abscesses we do not produce an infection. There seems to me two possibilities: It is possible that the antiseptic qualities of the blood serum are effective, and further that we have to deal with some peculiar condition of the cells. These questions are mentioned as purely hypothetical. The decision must be reserved for the future.

DR. S. A. OREN, Lanark, Ill.—I would like to ask about the value of peroxid of hydrogen in these cases where we open the mastoid cells.

DR. H. WOODS, JR., Baltimore—I agree with Dr. Dench in the general principle—that one's operations tend to become more and more radical as he becomes experienced in mastoid work. Yet I can not help recalling, in regard to one class of mastoid cases, the good results that used to follow a much less radical operation. I allude to cases, occurring in young children, of "dissecting tympano-mastoid" abscess. I remember a personal conversation with Dr. Sexton, a year before he died, in New York, in which he laid great stress upon this kind of subperiosteal accumulation of pus over the mastoid process. He found that it was only necessary to evacuate that accumulation. While we can not know the condition of the mastoid cells without opening them, many cases, especially in children, will get well with the less radical operation. Opening of the mastoid is a safe operation: but we are sometimes confronted with the question, when we find no opening in the cortex, whether it is absolutely necessary. I recall a case in which it was impossible to get a child to stay in the hospital. She was taken into the dispensary operating room. A large periosteal abscess was opened, and the patient got well in three or four days. In two other cases, operated upon last year, the cells were opened freely and nothing was found. There was some little otorrhea at the time. Whether these cases would have gotten well without opening the cells is a question; but it seems to me well worthy of remembrance that these cases sometimes do well if only the periosteal abscess be opened. Dr. Dench's opinions regarding cold corresponds with my experience. I doubt if I have ever seen a case in which cold "aborted" a mastoiditis, which, in the light of later experience, would not have disappeared without it. I would like to ask about the tip tenderness. Does the Doctor mean to say that tenderness at the tip is indicative of perforation through the tip into the neck? If so, our operative procedures must be altered when this symptom is present. I have often seen all the upper cells in good condition, and the one large tip cell filled with pus. Tip tenderness was marked, but I could find no perforation through the tip.

DR. H. G. SHERMAN, Cleveland—Our friends who see patients in large clinics may look at this in a radical manner. But those who deal with a large class of patients should observe conservatism and certainly do their whole duty. When suppuration begins no one can tell where it will end. I believe that is one of the greatest truisms in this line of work. Any man who has made a careful study of the anatomy of the middle ear and the structures of the middle ear and the cerebrum and the external parts, will appreciate that we can afford to be rather conservative. The class of patients I see will not permit me to open the mastoid except as a last resort; and in a very large practice that rarely occurs. I find in these cases of acute middle ear disease that the operation advocated by Dr. Dench of a free incision into the membrana tympani in connection with the use of the pneumatic speculum will, in the great majority of cases, stop the disease process. I would condemn as radical as possible the injection of the parts with bichlorid. The bichlorid of mercury in 1 to 5000 solution will injure the delicate tissues and anybody who knows the anatomy of the pneumatic cells knows that the solution can find an exit

only through an external opening. This question came up at the Ninth International Congress, and while in a way operative interference was accepted I noted that such men as Politzer and Macewen of Glasgow were conservative. And no man has accomplished greater triumphs than Macewen. Politzer divided the symptoms into objective and subjective symptoms. If the mastoid is swollen and tender, that does not indicate radical operative interference in every case. The application of leeches and the old-fashioned mustard plaster should not be discarded. The leeches, associated with the slitting of the membrana tympani and the use of the pneumatic speculum, will possibly stop those cases. If not we should make a Wilde's incision down to the bone and apply heat, which will stop another class of cases. I can not understand how a man can make an incision down to the lateral sinus with perfect impunity. I have seen in the hands of eminent men death occur with scarcely a moment's warning. I have known clever men to meet with fatal hemorrhage from the sinus. Such an operation is not justifiable unless we find symptoms of cerebral involvement with vomiting, pain increased by palpation extending to the occipital region, and in short we must be sure that we are dealing with an abscess or leptomeningitis before we take such a radical position. I am opposed to it because I recognize that it is not a simple thing to do. If you are treating the daughter of a man who is very particular in regard to the cosmetic effects, you can not cut into the mastoid freely without leaving a large scar; and you are opening up an avenue of infection. I recently had an old lady under my care with an acute inflammation of the middle ear which continued some six or eight weeks. The Doctor had assured her that she could return to Cleveland and that she would get well. I wrote to the Doctor that it was a long distance from New York to Cleveland. The patient did as the Doctor suggested. There came on a chill and a rise of temperature to 103.5. I told the husband that in order to save his wife's life we must evacuate the pus. But they confronted me with the Doctor's statement that she would get well. Gentlemen, she is well to-day. So I have seen cases recover upon whom I was not permitted to operate. In fact, we do not know how many of these cases will get well if we are conservative in treatment. I must have the most typical symptoms of cerebral involvement before I will go into the lateral sinus.

DR. C. M. COBB, Lynn, Mass.—It seems to me we have the same problem here as in general surgery. If you have pus the probabilities are that in a large majority of cases the pus will have to be evacuated by an artificial opening. If the cortex is thin, the pus may readily burrow through there; or if the cortex is not thin, it may go in a more dangerous direction. The question of cases getting well is largely a question of drainage. If the natural drainage of the mastoid antrum is good you will rarely get a mastoiditis of any consequence. My explanation of the cases that get well is that the aditus ad antrum is small and the swelling of the mucous membrane closes it entirely, but when the congestion subsides the drainage may become fairly good and the case recover without operation. But if the drainage is not good, the pus in the mastoid cells differs not at all from pus in other bony cavities. It may become encysted, but the probabilities are that eventually it will have to be evacuated.

DR. J. F. BARNHILL, Indianapolis—I very much wish such plain and rational discussions could oftener reach the whole profession. It is astonishing how the subject of mastoid treatment is so lagging, considering that every other branch of special and general surgery has made great forward strides. Dr. Dench and a comparatively small number of other eminent gentlemen of the United States have done much to bring it where it belongs, yet the fact remains that in the large body of medical men there is not that complete understanding of the subject, or interest in it, which there should be, and which its importance demands. But there are present symptoms of increasing interest, and I predict that if it is often and forcibly brought before the profession it may become a formidable rival of appendicitis in professional thought. The best treatment for mastoiditis is based upon the most rational of surgical principles. Better drainage is the one great object to be attained. The progress of the case at a given time is the determining factor as to what method of procedure shall be undertaken. If the case is seen early when the mastoid is inflamed, but contains no pus in its cells or antrum, securing free drainage by means of a thorough paracentesis, as described by the author, is of the highest service in aborting mastoid abscess. However, if pus has already formed it would be irrational, because unsafe, to depend upon the paracentesis alone, and so the mastoid operation should be performed, because it is the only certain way of relieving the part of its septic contents. Dr. Dench's reported cases show how successfully the mastoid operation may be performed, and compares favorably with results of operations far better known and with more approved procedures. I know of no abdominal surgeon who has made 316 abdominal sections with a smaller death-rate than is here shown for mastoid surgery. Granting that the necessity for mastoid exploration is as great as in abdominal exploration, statistics as here given justify the one as much as the other. Dr. Sherman says his patients will not permit the mastoid operation. We all find some objection of that kind, but can remember when the abdominal surgeon experienced like difficulties, until he convinced the profession and public on every possible occasion by voluminous statistics that there is little danger in the operation itself, till now he operates with little opposition from profession or public. Otologists may profit by this example and become more aggressive to the betterment of their specialty.

As to how radical any mastoid operation should be, I wish to emphasize the statements already made, by saying that it should be as radical as the disease is extensive, and that any operation falling short of removing all the diseased tissue will not only fail to cure but will bring the operation into disrepute. The necessity for secondary operations is proof positive that the primary operation was imperfectly performed. Therefore no operator should undertake to do this work unless he is prepared to follow up the disease wherever it may lead, opening every cell, the middle fossæ, or even the lateral sinus, as well and thoroughly as in case only a simple opening into the antrum is all that is required. Extensive operations require large wounds, but large wounds, free from diseased tissue, heal better, quicker and more certainly than smaller ones with necrotic or suppurating areas within them.

DR. A. E. PRINCE, Springfield, Ill.—I am not quite in accord with the conservative idea expressed by Dr. Sherman. I live in a very small town and I do not hesitate, whenever duty calls me, to suggest an operation, and I do not know that there is any difficulty on the part of the public in accepting my recommendations. I think too many of us discuss the question too much with the patient and leave the patient to make up his mind whether or not to have an operation done. I first make up my own mind and then tell the patient whether or not it is my advice to have an operation done. But when you discuss with the patient the advisability of doing the operation you raise many queries that often cause them to postpone the operation. For many years I have been doing what is called the conservative mastoid operation. I operate when there are swelling and tenderness and symptoms of suppurative mastoiditis. I believe in such cases Nature would probably attempt to make an external opening if I did not operate. The operations that we do deserve credit for are those upon cases in which the mastoid is not invaded, in which the escape of pus from the antrum through the infundibulum is obstructed and death from meningitis is likely to occur in a very few days. In those cases, when I go into the antrum before I find pus I think that I may save the life of the patient. I hope to educate the medical profession in my vicinity so that whenever there is a patient with severe pain and without any tenderness or redness of the mastoid, or with a very small amount of pus escaping through the meatus, it will be recognized as a case that requires the most careful and prompt decision about opening the mastoid before the patient should die. In my own observation in the vicinity where I live, the last few months there have been two cases die from meningitis that were distinctly ear cases and could probably have been saved by operation. In those cases the surgeon put off operation too long. After hearing a paper that I read before the Society recently, many of the members

said that they wished they could have known it twenty years before, for they felt they had all seen cases that probably would not have died had the operation been performed.

I do not regard the opening of the antrum as dangerous. The location is plain, and the free drainage will permit you to say to the patient that the operation, if done sufficiently early, will almost surely give a favorable result. But I must confess my ignorance in regard to the after-treatment in those cases in which we have opened the sigmoid sinus. I am not certain in those cases as to the best treatment after operation.

DR. DON M. CAMPBELL, Detroit—It seems to me that the aspect of this mastoid question in the last ten or fifteen years has changed markedly, as has been the case with many other forms of disease. My recollection of the status of the question and the clinical aspect of the cases as I observed them ten or fifteen years ago is that we seldom had in those days a serious involvement of the mastoid cells following or complicating an acute suppurative otitis media. I do not mean to say that it was an unknown thing, but compared with the condition to-day, those cases were much less frequently observed. To-day, since the widespread grip epidemics have invaded the country, we find many more of these cases go on to serious involvement of the mastoid cells and actually demand surgical interference for their cure. That condition has been a problem to me, and the investigation of the bacteriologic aspect of these cases has been of a good deal of interest. As far as my own investigation along that line has been concerned, I have not been able to find or demonstrate any special infection. We have found streptococcus, staphylococcus, and mixed infection. I would like to know Dr. Dench's opinion as to whether it is a special infection or the effect of the grip epidemics on the general economy that has made these cases so much more frequent.

DR. C. S. BAKER, Bay City, Mich.—I think Dr. Prince has hit the keynote. There has been too much conservatism heretofore in the handling of these cases. The old Wilde's incision and the old methods of operating have passed away. Every surgeon should be conservative, but I have an opportunity to observe the results of procrastination far oftener than should happen. The profession at large has not been sufficiently educated in the conduct and management of this class of cases. Wherever pus is found it should be evacuated. Of course, if the patient refuses evacuation of the pus then your responsibility ceases, but your duty is not done until you insist on doing what, in your judgment, is the proper procedure. We should not discuss the case with the patient but we should give him our advice as to whether or not the case should be operated upon. The trouble is, we do not know when the last safe moment for waiting comes and when the patient can not recover. I have seen a patient with the mastoid cells entirely filled with pus, the bone ulcerated through into the cranial cavity, within a week from the onset of her disease: again, I have seen a patient in whom the suppuration existed two or three months with few symptoms and only slight swelling or tenderness, and still there was great breaking down of the cells. In another case on operation the probe passed directly through into the temporal fossa, although the patient had not missed a day from school. So there is no symptom, or group of symptoms, that will absolutely indicate when the danger point is passed. When we are satisfied that the antrum is not having proper drainage we should give it a suitable outlet for the escape of pus externally.

DR. D. A. KUYK, Richmond, Va.—Much depends on the patient, his physical condition, etc. It is my experience that the symptomatology presented by the negro differs somewhat from that of the white race. National characteristics, tendencies, and idiosyncrasies demand careful consideration in forecasting the result of the mastoiditis or, in fact, almost any other inflammatory condition. For instance, I doubt very much if the American is as prone to mastoid inflammation following suppurative ear disease as is the European, either in point of frequency or severity. The education of the laity and of the profession has been referred to and is a most important feature. The surgeons have by persistent writing and teaching aroused the profession and laity to the importance of early recognition and treatment of appendicitis and many other surgical diseases, and so must aurists by concert of action, persistent writing and plainly worded, concise papers, before the various state societies, institute an educational crusade; the general practitioner will soon become so fully convinced of the urgent necessity and the great importance of the early recognition of mastoiditis that many lives will be spared that might otherwise have been lost by the indifference or ignorance of the physician. To me it seems that the average physician knows less about mastoid disease, a condition endangering life, than about glaucoma, of which there is still too little known, and too seldom recognized, a condition in which sight may be lost but in which life is not at stake.

DR. J. HOLINGER—I must state that in the two secondary operations I did not operate the first time, but only made the secondary operation. I do not want to have the impression prevail that a secondary operation was necessary after I had done the primary operation.

DR. ROBERT LEVY, Denver—The operation, it seems to me, shortens very materially the convalescence, whatever else may be said for or against it. The danger of the operation has never seemed to me excessive, although I must confess I approach it with a certain degree of temerity. This is not caused by my own experience, but the experience of others should increase the care with which we approach this operation. Again, the hearing is to a considerable extent much better preserved, and that should enter into our consideration of the necessity for the operation. I have in mind two cases in the same family, the patients being sisters. The first girl was taken during last winter with characteristic symptoms. The family physician did not see the necessity for operation and consequently did not call in consultation. During the time she was progressing slowly and her symptoms were disappearing gradually, the second sister was taken ill, but with so much violence in the attack that the physician could not help calling consultation. The second girl showed some constitutional symptoms. There was a double mastoiditis and she was operated upon. She was taken sick a considerable period of time after the first girl. A double operation was performed at one sitting and she made a very prompt recovery. When she was discharged her sister was still suffering considerable pain and the pus was still being discharged from the ear. The result was that the girl operated upon made a more rapid recovery and has much better hearing than the other girl. It seems to me that it is wise not to irrigate after a free incision in these cases, and in this respect I would beg to differ from Dr. Dench. Sometimes I find a much better procedure is to clean with sterile gauze, and then to drain with sterile gauze instead of irrigating. I am satisfied that in other cases in which irrigating has followed a free incision harm has been done. Another point which was brought out, is the character of the epidemic, so to speak, that should also determine very materially our action in the cases. It seems to me we too seldom make, after a free incision of the drum membrane, a bacteriologic examination. If this is done we may often find help in the determination of the nature of the infection and its prognosis.

DR. DENCH, in closing—I am in perfect accord with most of the statements Dr. Holinger makes, but there are one or two things that I do not believe. If we have pus in the mastoid I do not believe that it will be absorbed and the patient get well. But I do believe, as has been said by Politzer and as I mentioned in my paper, that in these cases we have congestion of the mastoid cells and we may then get absorption, but it is my experience that this never occurs after the formation of pus. In the epidemics of grip in successive years we find the mastoid complications vary exceedingly. In the present epidemic of grip, which has been rather severe in New York this year, I have failed to find a case of acute otitis without some tenderness over the mastoid tip. In reference to the use of the sharp spoon in the antrum, I feel as certain that the Doctor is wrong as he feels he is right. I think it is important to carry the sharp spoon down and make the passage from the middle ear to the antrum larger so the ear will drain thoroughly, and if the Doctor does that he will not have the infection of any cell in that neighborhood, because there is no cellular tissue left after you get down to the hard bone.

Failure to do this is a frequent cause of delayed convalescence and often the cause of a secondary operation being necessary. A little drop of pus may become imprisoned and not be evacuated at the time of operation, but if you use the sharp spoon you will evacuate it. I had a case this winter which brought that out very nicely. I entered the mastoid antrum; with the spoon I opened a cell and found a perforation with pus next to the dura, but separated from the collection in the mastoid antrum by a wall of apparently healthy bone. Simply by that procedure I saved the patient from serious infection. Dr. Payne has asked me about the after-treatment of these wounds. I simply pack them and let them heal up from the bottom. Turning-in of the skin flaps I have used only in the radical operation. As to filling up the large cavities with a blood clot, I have had no experience. One gentleman has had considerable success in filling up the cavities in this way, but I have had no experience with it. In New York they have tried that but the patients had promptly a temperature of 104 or 105, and the clots had to be taken out, and so I have not tried it. I find the operation in the way I do it gives good results and does not leave a very bad scar. As to the effect of gravity, I do not believe it makes much difference whether the patient lies on the back or on the side. As to facial paralysis, I do not think that is of any value as a symptom of mastoiditis; there are quite as many cases of facial paralysis without mastoid involvement as with mastoid involvement.

I am always afraid of peroxid of hydrogen, because the large amount of gas may force infective material into the deeper tissues. If we have a small perforation through the roof of the tympanum exposing the dura and there is an effort on the part of Nature to seal that off with adhesions, these adhesions may be ruptured and you may get a diffuse in place of a circumscribed meningitis. Dr. Woods spoke of the operation upon children in cases of so-called temporal mastoid burrowing abscess which Dr. Sexton described in his book. I am aware that many of those cases do get well with a simple incision, but I think it is unsafe. I was taught a lesson in regard to that by a little patient in whom I evacuated an abscess by simple incision. I did not go into the antrum. Everything seemed to be doing nicely and then the patient became comatose and I found an accumulation of pus over the squamous plate, with perforation through the squamous plate, and the patient died promptly of meningitis. So I think we should go promptly into the mastoid antrum; we should be certain of the condition with which we are dealing. Tip tenderness always indicates a rupture through the tip of the mastoid. If the tenderness spreads up in the direction of the antrum I operate. But I have never gone into a case for tip tenderness alone without rupture through the tip. I have operated upon cases in which I had tip tenderness first and antrum tenderness later on. But I rely upon the antrum tenderness. I do not believe that Dr. Sherman is the only one in this room who has good patients, and my remarks are not based altogether on hospital practice. I do not think that can account for the difference we have in our views. He says bichlorid of a strength of 1 to 5000 is irritating. If that is so we should make it weaker. After you open the tympanic cavity by means of an incision you could not, by forcing a fluid into the canal, drive it out through the mastoid antrum. The air in the mastroid cells would prevent the fluid entering there. While I agree with Dr. Levy that in some cases drainage with gauze may be successful, I do not believe there is any danger in irrigation and I believe that irrigation is the best means of cleansing the canal. In reference to Wilde's incision, I believe it to be absolutely useless. I would rather wait a day and then do a complete mastoid operation. In the first place, Wilde's incision is absolutely unnecessary. If you make an incision in the drum membrane and along the canal you relieve the tension much better than by incision over the mastoid. I do not think Dr. Sherman meant to say that he would wait for symptoms of cerebral involvement before he would operate, for certainly no man would wait for those symptoms before doing so simple an operation. Death from opening the lateral sinus is not likely to occur if the surgeon is careful. The hemorrhage can be stopped entirely by pressure with the finger and then the application of a piece of gauze. You can get at the sinus and do a thorough operation. Dr. Prince asked about the after-treatment. I am glad to hear the Doctor's remarks, for I think he is educating his people in the right direction. In reference to the after-treatment of these cases my practice is, after the incision of the sinus, to control the hemorrhage from above and then to clean out the cavity so that I get free hemorrhage both from above and below. My finger is then placed on the sinus which is bleeding. I then wind up a piece of gauze and pass it in so as to stop the hemorrhage from the sinus by pressure. To prevent infection of the sinus I tampon first the antrum and the mastoid cavity and then I put in a separate gauze tampon between the sinus and the tampon in the mastoid wound so as to wall that off completely from the infected area, that is, provided I have found the sinus healthy. Thus I tampon thoroughly and I have never had an infection. Probably I have done this, taking out clots, some twenty-five times, and I have never had a death. Dr. Amberg spoke about the particular kind of infection. I think that is important but I have never done any work along that line. From a number of colleagues I have heard that the infection most frequently present is the streptococcus infection, and such cases more frequently go on to mastoid involvement than when we have the pneumococcus or staphylococcus infection.

THE PREFERABLE METHOD OF URETERO-URETERAL ANASTOMOSIS.*

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Injuries to the ureters are so common in conjunction with pelvic and abdominal surgery that a familiarity with conservative methods of dealing with them is of great importance. This necessity is particularly noticeable when one reads discussions in which the foremost surgeons of the age report cases of nephrectomy for injuries of the ureter during abdominal operations and for uretero-vaginal fistulæ. It is not necessary to mention here the ease by which most of such grave operations are obviated by more conservative work. Recently I found six cases of this kind reported in one discussion, all of which apparently could have been successfully treated by ureteroplasty. Nor is it necessary to refer to the totally different indications of uretero-ureteral anastomosis and uretero-cystostomy. The former of these two, however, seems to be dreaded and misunderstood. A recent journal review of Von Gubaroff's case mentions the possibility of it for divided ureter when utero-cystostomy can not be done. To one familiar with both operations such a statement approaches the ridiculous. There can be no question that when both operations are practicable uretero-ureteral anastomosis is the better, as it restores the duct to its natural state and does not endanger a faulty vesico-ureteral junction as was noted in the cases of Pozzi, Boari and Polk.

Experiments on the very small ureter of the dog caused an unwarranted fear of urinary leakage and local injurious contraction. A sufficient number of operations have been reported to show that these points of danger have been exaggerated. But two cases of urinary leakage have been mentioned and in these it has not interfered with perfect results. In but one case (Schopf's), the first, has any subsequent narrowing been noted, and in this, to tuberculosis, which caused the fatal result, the narrowing may be attributed.

* Read in the Section on Obstetrics and Diseases of Women, at the Fifty-second Annual Meeting of the American Medical Association, held at St. Paul, Minn., June 4-7, 1901.

This operation has been done by four different methods, namely, end-to-end, end-in-side, end-in-end, and lateral or side-to-side. These have been modified by different surgeons, as will be later mentioned. The end-in-side, known as the lateral implantation of Van Hook, has been done a sufficient number of times to prove beyond doubt its success. Since the preparation of my paper for the American Gynecological Society last year[1] in which were mentioned five cases, another successful one, done by Dr. George Goodhue, of Dayton, Ohio, has been communicated to me, making six in all.

The end-in-end plan has been followed 12 times, once by Von Gubaroff,[2] once by B. B. Davis,[3] once by myself and nine times quoted in the paper mentioned of last year. In Von Gubaroff's case an operation was done for the removal of an enormous uterine fibrosarcoma and a bit of the right ureter was carried away with it. Death occurred in one month. An autopsy revealed a perfect result of the operation on the ureter. Davis' case ended successfully.

The report of my case is as follows:

E. R., white, 32 years of age, widow, though married fifteen years IV-para, was admitted to Columbia Hospital, May 30, 1900, complaining of pelvic pain and an occasional irregular bloody vaginal discharge which had existed eighteen months, but had recently been much exaggerated though she was in the constant care of a quack doctor. The following day curettage and cauterization with chlorid of zinc was done and June 11 radical operation for cancer of the uterus was performed,[4] removing nearly the whole of the vagina with the uterus, its ligaments and appendages. The left ureter was in a mass of enlarged glands at the iliac bifurcation and about one inch of it was resected. The upper end was invaginated into the lower by the method of Poggi, using three sutures of No. 00 silk, which passed entirely through the lower end and the muscular and fibrous coats of the upper. These were doubly needed and served to pull the upper into the lower end after forcible dilatation of the latter. Over this interrupted catgut sutures were applied. The duct was free for three inches below the point of suture and at one point was sutured to the wall of the pelvis to prevent entanglement in the gauze packing, incident to the operation. She made a complete recovery without leakage and is still in good health.

Thus twelve operations by this method have been done with two deaths, neither of which was attributable to the operation, unless the shock which caused death in one of MacMonagle's three cases was partially due to this feature of the operation. MacMonagle and myself dilated the lower end before making the anastomosis and in the other eight cases the lower end was split on one side for varying distances up to 4 cm. in Von Gubaroff's case.

The end-to-end method has been done, both by transverse and oblique anastomosis. The latter has been done but once on man. In this case, done by myself more than five years ago, the patient is still free from any annoyance from the anastomosis. During the past year Kelly[5] has reported a case done by the transverse plan of this method, which resulted successfully, and which, added to my table prepared last year, makes a total of thirteen cases. Two of the thirteen ended in death in twenty and forty-two days, respectively, from conditions independent of this procedure. Henry Morris, on page 38 of his work on "Renal Surgery," 1898, mentions a case in which he divided a ureter, July 21, 1897, in doing abdominal hysterectomy. The ends were united, but the patient died on the third day. At the autopsy the junction of the two ends was found to be water tight. No description of the method employed is given.

Thus it will be seen the ends of the severed ureter have been united 33 times with no evidence of ureteral incompetency as a result. The side-to-side anastomosis has been done experimentally by D'Urso and De Fabii.[6] It has probably not been done on man.

RESULTS.

Experiments on dogs demonstrated the feasibility of Van Hook's lateral implantation, and on man the results have been equally good. The transverse end-to-end and the end-to-end-methods were dismal failures on dogs. But the oblique end-to-end seemed sufficiently safe on them. The side-to-side anastomosis experiments offer bright prospects in suitable cases. Notwithstanding the bad results attending some of the experimental work not one of the thirty-three operations on man has been unsuccessful, and twenty-six of them were done by the end-to-end plan, which was formerly thought to be impossible, or by the end-in-end method of Poggi that Tuffier and Budinger denounced so unqualifiedly as a result of their experimental work. They found peristalsis of the duct always pulled the upper end out of the lower, an accident that never occurred on man. As previously mentioned, all these methods, as practiced on man, have been highly satisfactory, though in six cases death occurred from conditions foreign to the ureteral injury.

The indications, however, are not the same for all. In a given case one may be easily applicable while another may be well-nigh impossible. Most of these operations have been for accidental section of the ureter. The duct has been firmly ligated above, or both above and below, and it has been crushed by forceps near the site of section. Such cases require a resection at times and in some a section of considerable length has even been unconsciously removed with a tumor of some neighboring structure. Such loss of ureteral tissue also creates one of the conditions to be met in these operations. Another one, encountered by Emmet and Kelly, is dilatation of the upper end and still another is the direction of the cut severing the ureter. The thickness of this duct is occasionally of the utmost importance.

According to Van Hook's description of his method of lateral implantation, one and a half inches of the duct must be utilized in the operation. The lower end is ligated and, beginning 0.5 cm. below the ligature, a longitudinal slit 1 cm. in length is made in it. Through this opening is drawn the upper cut end, by means of sutures passing outwardly through its wall some distance from its end. These pass outwardly through the wall of the receiving end of the ureter 1 cm. below the incision, or 2.5 cm. from the ligature. As the ligature is probably placed at least 1 cm. from the end, these sutures penetrate the wall of the lower fragments at least 3 cm. from the cut end. They have previously passed through the upper part about 1 cm. from the cut end. Therefore, when these sutures are tied they coaptate points of the ureter that have been at least 4 cm. distant from each other. This is in

1. Annals of Surgery, 1900, xxxii, 165-194.
2. Centralbl. f. Chir., Feb. 2, 1900, abstracted in Phil. Med. Jour., 1901, vii, 888.
3. JOURNAL A. M. A., 1900, xxxv, 1669.
4. Am. Gyn. and Obst. Jour., April, 1901.
5. JOURNAL A. M. A., 1900, xxxv, 862.
6. Supplemental Policlinico, Roma, 1898-9, v, 1249-1250.

the normal ureter. In Emmet's case, in which the upper end was dilated, the slit in the lower end must have been correspondingly longer, having always to be equal to the circumference of the introduced end. For the side-to-side method fully as much length of the ureter will be necessary. For the end-to-end method it is evident some portion of the length of the duct will be required. Robson found it necessary to utilize one inch of it in his case. Noble split the lower end three-eighths of an inch and the invaginated end probably passed fully as far beyond the split, making three-quarter inch invagination. In my case, in which the Pozzi plan was followed, the invagination was but about three-eighths of an inch. In the oblique end-to-end plan the amount of waste tissue varies from nothing, when the severing incision is oblique, to an amount depending upon the extreme diameter of the ureter with transverse ends, probably never more than three-quarters of an inch. It is readily understood that an oblique section of the ureter, by accident or otherwise, is readily sutured end-to-end, without loss of continuity. But if the section be transverse and the ends trimmed obliquely loss of continuity will depend in amount upon the degree of obliquity and the extreme diameter of the duct at the point of suturing. In the transverse end-to-end no loss of continuity is necessary to the process, provided the section has been made transversely. It will thus be seen the transverse end-to-end makes no demand on the length of the ureter, the oblique end-to-end requires a small amount, the end-to-end from three-eighths of an inch, by the Poggi method, to 4 cm. by Von Gubaroff's modification, the side-to-side about one and a half inches, and the Van Hook plan at least the same amount. In such cases as Emmet's, done by this plan, and Kelly's, by the transverse end-to-end, in which the upper end was much dilated, considerably more of the length of the duct would be required by the Van Hook method. Fortunately this duct is very elastic and can be successfully repaired if even three inches of its length be lost, without loosening the kidney and anchoring it nearer the bladder. But an operation that requires at least one and a half inches for such union will not be as applicable as one requiring less or even none of its length for this purpose, as shown by Allen's case. It would, therefore, seem the transverse end-to-end must be the preferable method so far as length of the ureter is concerned, except when the ends are already cut obliquely, in which case the oblique method would be the most economical. Next would come the end-to-end plan of Poggi, or the oblique end-to-end, next the Robson modification of the Poggi, and least available, the Van Hook, which practicably is inapplicable when more than an inch and a half of the duct has been cut away, or the side-to-side plan of D'Urso and De Fabii. When the upper end alone is dilated, as occurred in the two cases mentioned, the oblique end-to-end and the side-to-side are clearly the best plans to adopt. It is very difficult to get a large end into the lumen of a much smaller one, as related by Emmet, or to unite them transversely, end-to-end, as done by Kelly. In the former great forcible dilatation of the lower end is necessary, whether this enlargement be from urinary stasis, or thickening of the duct due to inflammation about a calculus, or other cause. And in such as Kelly's, considerable puckering of the upper end is liable to occur, unless a slender triangular piece be cut from one side of it, which complicates the operation and invites failure. In such cases the lower end could well be cut obliquely, thus giving a larger surface for approximation with the transverse end of the larger upper end. This would prevent puckering in the end-to-end and choking of the lower end in the Van Hook operation, and would not cause any urinary stoppage from angulation. The danger from this latter should not be expected to be as much as by the Van Hook operation, in which it has been proved, by Bloodgood, to be practically nothing in the normal ureter. If both ends are dilated, one of the end-to-end methods would be particularly easy, and even the Poggi would be simplified, but the Van Hook would be still less applicable, because of the necessity of increasing the lateral slit to receive the large upper end. On theoretical grounds constriction at the site of union should occur in the Poggi and Van Hook operations, but it has not been known in man. Whether such condition would result were the injury at either of the three narrow points of the ureter is yet to be learned. Certainly the end-to-end methods seem less likely to be followed by local undue narrowing of the duct.

From the points mentioned, the end-to-end or the end-in-end method are applicable to every case in which the end-in-side or side-to-side plans could be used, with one single exception. The reverse can not be said. With the improved technique they are as safely done and in even less time. It would, therefore, seem the ingenious plan of our splendid American surgeon, Van Hook, would scarcely ever be needed, that the end-to-end plan is most applicable, and next to it, the Poggi end-to-end. With these two latter methods the surgeon should be able to successfully repair any injury to the ureter, except of its very lowest part, involving a loss of its length not exceeding three inches.

OSMOTIC PRESSURE AND ITS RELATION TO UREMIC MANIFESTATIONS.

A CONTRIBUTION TO THE PATHOGENESIS OF UREMIA AND KINDRED AFFECTIONS.*

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NEW YORK CITY.

It seems to me that we were laboring in a wrong direction when we—though in vain—tried to fasten the origin of uremia and kindred conditions upon a purely physiologico-chemical basis. By this I do not mean to imply that the various excrementitious substances which, by their retention in the blood, are alleged to give rise to these grave disorders, remain without any influence whatsoever upon the causation of the latter. Their participation, however, primarily at least, I deem not of a purely chemico-toxic nature.

Most of these effete products, with the exception of some inorganic urinary constituents, in themselves are, if at all toxiferous, certainly to a limited degree only. The greatest poisonous qualities are exhibited by the potassium salts—the chlorid, sulphate and phosphate of potassium. They are, however, contained in too insignificant amounts in the blood serum, even when an accumulation has taken place, to ever call forth paramount toxic phenomena. Besides, the syndrome of potassium is not entirely congruous with that of the

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uremic state. Intermediate substances in sufficient quantities to give rise to toxemia enter the blood current but rarely, and in case they do the subsequent intoxication is certainly not one to be confounded with uremia.

Intravenous injection of urine, first attempted by Feltz and Ritter, and later taken up with great vigor by Bouchard and his followers, has virtually demonstrated nothing beyond the facts known to us before, viz., the symptom-complex which we designate as uremia is not the consequence of a single toxic principle, but it results from the retention of all those substances which normally enter into the composition of urine.

Ignoring a hypothetic toxalbumin, which if present at all can not be a primary excitor, we do not find in the blood of uremia any other factors but those prevalent in the normal state. The only difference lies in the quantity. Uremia thus being an auto-intoxication by retention of normal products of metabolism and catabolism, in the first instance, is therefore rather due to a physical than a chemical anomaly.

OSMOTIC PRESSURE.

A salt or an organic compound which, when added to a liquid, unites homogeneously with it, is soluble in the liquid. If such a solution is brought into contact with the same solvent or with a less concentrated solution of its own nature, a transmission of the substance in solution will ensue and continue until both solutions have attained a congruous degree of concentration. This power of migration of the molecules is known as diffusion. If, on the other hand, the more concentrated solution is prevented from coming into direct contact with the solvent or the solution of lesser density by a semi-permeable membrane, permitting the passage of the solvent but not that of the particles of the dissolved substance, the inherent energy of the latter will display itself by exerting a certain pressure upon the membrane. This energy, designated as the osmotic pressure of dissolved substances, is analogous to the pressure of gases, is subjected to the same laws as the latter, and varies with the quantity of the salt or organic substance in solution. Accordingly, diffusion and osmotic pressure are but different phenomena of one and the same energy. If the latter manifest itself by the migration of particles of substances in solution it is diffusion; if by tension, it is osmotic pressure. Osmotic pressure is dependent upon the molecular concentration of the solution. In the first instance the degree of osmotic tension of a solution is determined by the number and not by the weight of molecules in a known volume of solution.

It is analogous with the pressure of gases and is an enunciation of the kinetic energy of the molecules. The importance of the osmotic processes for the organism in the healthy as well as in the pathologic condition has of late only found due consideration. All organic matter is saturated with water. The cells of the body are more or less permeable by water. This is the solvent for the salts introduced with the nutriment. If the contents of the organism on soluble salts and on water remain unaltered, so that for a certain period neither salts nor water are introduced nor eliminated, all the watery constituents of the organism would become one homogeneous liquid, and the same osmotic pressure would prevail over the entire system, in the cells as well as in the extracellular liquids.

Such an absolute equilibrium between intracellular and extracellular fluids, although the organism aspires to it during all phases of life, in reality does never occur in the normal state; for the moment fresh nutrient salt molecules are dissolved by, or thrown out of, the solution the equivalence of the osmotic pressure ceases to exist.

Augmentation of osmotic pressure in the cell through increase of dissolved molecules may call forth the following eventualities:[1]

1. If the cell walls are fully permeable for the salt molecules, these will pass from the cell, the place of higher concentration, to such of lower density, until the equilibrium is re-established.

2. If the cell wall is impermeable for the salt molecules, these will exert a pressure upon the former and water will penetrate into the cell; this is followed at first by concentration of the liquid in the immediate surroundings of the cell, and later on by uniform concentration of the liquid in a larger circumference.

3. If the cell wall is to some degree only, but not absolutely, impermeable for the salt molecules, a migration of the latter from the cell and an infiltration of water will ensue synchronously; thus a process of diffusion occurs with one of osmosis.

THE OSMOTIC CONDITIONS IN THE BLOOD.

The osmotic pressure of a solution for physiological purposes is generally compared with that of the blood serum. By the term "isotonic solution" we understand one which exerts an osmotic pressure alike to that of the serum; by the term "hypertonic solution," one whose osmotic pressure is greater than that of the serum; and by "hypotonic solution," one whose osmotic pressure is beneath that of the serum. If a drop of blood is permitted to fall into distilled water, the salts and coloring matter of the corpuscles are dissolved out. This phenomenon will not occur if, instead of distilled water, a salt solution of certain concentration is employed. The corpuscles, unaltered, slowly descend to the bottom of the vessel. A salt solution of just sufficient concentration to prevent the escape of the coloring material from the erythrocytes is tonic. Every specimen of blood thus requires a specific salt concentration.

Plasma and serum are always hypertonic, that is, they exert a greater osmotic pressure than do the salt solutions which are isotonic with the blood corpuscles. Were the former's concentration but isotonic it would not suffice to prevent corpuscular disintegration during active metabolism, as the admittance of but a limited amount of water into the circulation would cause a solution of a part of the corpuscles. The salts derived from the disintegrated erythrocytes increase the concentration of the surrounding liquid, thus checking further corpuscular solution.

The osmotic pressure of the plasma may be subjected to certain fluctuations during the course of the day, the most pronounced deviation from the mean occurring in the early afternoon hours. The fluctuations in osmotic tension must be due to an increase or decrease of salts in solution. We may assume that either the contents or salts of the plasma remain stationary, and the water diminishes, or that the amount of the latter persists unchanged and that new salt particles are carried into the plasma. Without going into further details as regards this point, I merely wish to state that, according to my observation,[2] the somewhat augmented afternoon alkalescence of the blood and the diminished urinary acidity

1. Koeppe: Physikalische Chemie, etc., 1900.

2. Heinrich Stern: Some Observations on the Chemical Reaction of Human Urine; Med. Rec., Oct. 29, 1898; and Some Observations on the Relation of the Alkalescence of the Blood to the Urinary Reaction; Med. Soc. of the County of N. Y., May 27, 1901.

or the latter's alkalinity during the same period occur independently from the ingesta, at least to a certain degree. The ingesta in this respect seem to act as accidental modifiers only. The increased osmotic pressure of the plasma and serum during the afternoon hours—it being entirely dependent upon the latter's concentration and consequently on the amount of salts dissolved in it—appears to be due to the same causes as is the increased alkalescence of the blood, that is, to certain processes in association with internal respiration or oxidation. Naturally the direct introduction of a sodium chlorid solution or the injection of large amounts of sodium chlorid or some other salts results in an increased osmotic tension of the blood plasma. The ingestion of water reduces the osmotic pressure to a limited degree; the more directly water is introduced into the blood current the more certain and pronounced is the action in this regard; by whatever mode water is introduced, however, the decline in osmotic tension is but for a very brief period.

The molecules of a number of compounds—salts, bases and acids—when dissolved are divided up, are dissociated into ions. The higher the dilution the more perfect the dissociation as a general rule. The electrical conductivity of a liquid is dependent on the movements of the ions which themselves are charged with electricity.

Substances capable of undergoing dissociation are electrolytes; an ion plays the same rôle in regard to osmotic pressure as a molecule. The osmotic pressure of an electrolyte, when dissolved, is dependent on the degree of its dissociation.

The more organic molecules or inorganic molecules in organic combination are contained in a liquid, the lower is its electrical conductivity. Blood-serum among the body liquids possesses a relatively high electrical conductivity; on the other hand, the blood-corpuscles, whose molecules are organic and whose salts are in organic combination, exhibit but minute conductive qualities.

There is no vital process, be it ever so unimportant, in which diffusion or osmosis does not participate. Conditions for the involvement of osmotic pressure always exist in the organism, for where and whensoever two solutions come in contact by means of a semipermeable wall, as for instance intracellular and extracellular liquids, osmotic tension is displayed. Circulation of blood and lymph, the various glandular secernments, urogenesis, and poiesis, are such processes, in the discharge of which osmotic pressure is a most potent factor.

The albumin molecule is a complex molecule. On account of its non-solubility it does not per se exert any influence upon the osmotic qualities of the body liquids. The soluble products of cell catabolism necessarily enhance the osmotic tension of the latter. It has been found that the solubility of the products of retrograde albumin metamorphosis stands in direct relation to the intensity of cellular oxidation. When oxygen is freely admitted to the tissues, soluble products of albumin disintegration are the result; the reverse ensues—that is, with difficulty soluble compounds are the outcome—when the internal oxidation has been reduced. In other words, normal intra-organic oxidation is followed by an increase of osmotic pressure in the body fluids, while diminished tissue oxidation exerts but little influence on osmotic tension.[3]

3. Poehl: D'un rapport entre les oxydations intraorganiques et la production d'énergie cinétique dans l'organisme, Comptes Rendus de l'Académie des Sciences; Paris, 24 Avril, 1899.

The conveyance of the soluble products of albumin disintegration, of sulphates, phosphates and urea, or its precursor into the lymph of the tissues, augments the latter's molecular concentration. The increased osmotic qualities thus exhibited tend to the withdrawal of water from the blood current to the lymph.

When the crystalloid products, by their accumulation, occur in a higher concentration in the lymph than in the blood, they "diffundate" toward the latter, that is, they are dissolved by the blood-water. In this manner the products of metabolism and catabolism find entrance into the blood which carries them to the kidney, from which they are excreted.

In the same volume of water urine contains about three times as many molecules in solution as blood (Koranyi). Hence the assumption that the kidneys are instrumental in lowering the osmotic pressure of the total blood, and that they thus contribute materially toward the maintenance of a perpetual discrepancy in the osmotic pressure of the blood on the one side, and intercellular liquid and lymph on the other. The more of these crystalloid substances excreted by a certain volume of urinary water, the greater will be the resulting difference in osmotic tension between the blood and intercellular liquid, the faster will be also the motion of the lymph current. Accordingly, the osmotic conditions of the blood, intracellular liquids and lymph are reflected in the osmotic tension of the urine.

The foregoing outlines relating to the nature of osmotic pressure and to the osmotic conditions in the organism, although brief and in many respects incomplete, suffice for our present purpose.

UREMIA AS A DISTURBANCE OF OSMOTIC TENSION.

When the excretory activity of the kidney is materially interfered with, be it on account of a structural or functional anomaly or of both these together, the products of retrograde tissue metamorphosis already formed at the beginning of renal inactivity are retained in the blood. If the intensity of the metabolic processes has not become synchronously diminished, the crystalloid compounds rapidly accumulate in the blood current; they diffuse but slowly toward the latter if intra-organic oxidation is lessened substantially. Be that as it may, the concentration of the blood plasma is inevitable in either eventuality. A portion of the dissolved crystalloids may be excreted by other emunctories; however, this can be a comparatively small amount only, which, moreover, is not followed by a decrease in plasma concentration, as water is simultaneously secerned with the effete matters.

The great number of molecules dissolved in the plasma exert a high osmotic tension, and tend to "diffundate" toward the less concentrated body liquids. At this time the intercellular liquid in certain tissues may already possess a greater concentration than the blood plasma. Ultimately all the fluids of the body exhibit a similar degree of concentration.

This high degree of concentration is accompanied by a series of manifestations co-ordinate and successive, which have been grouped together under the designation of "uremia." This is really, if we may call it so, a mechanical intoxication, not one of chemical origin, not the obnoxious results of one or more substances, but the consequences of an abnormal increase in osmotic tension of the blood plasma and the fluids of the body. The symptoms of a secondary intoxication, due

probably to the presence of large amounts of potassium salts, may further complicate the clinical picture.[4]

The phenomena which occur in the blood after the injection of large amounts of concentrated salt solutions are the same as those in uremia; they make their appearance together with the increase in the concentration of the blood when the elimination of the accumulated substances from the blood, on account of the exhaustion of the resorptive qualities of the tissues, does not occur any longer.[5]

Novi[6] noticed tonic and clonic convulsions in dogs after intravenous injection of a 10 per cent. sodium chlorid solution, in such amounts that the blood had attained twice its former concentration.

In maintaining that the origin of these convulsions is due to withdrawal of water from the cortex cerebri, Novi, who could not then (1887) know of the more recent teachings of osmosis, practically occupies the same standpoint as the present writer.

The great number of sodium chlorid molecules introduced into the blood current exerted a high osmotic pressure, water passed from the tissues to the blood, the latter became more diluted, while the surrounding tissues and organs for the time being were deprived of some portion of their liquid. After a time the withdrawn fluids were again in the tissues, but they all exhibited a uniform high concentration.

The convulsive and other manifestations of uremia and kindred affections are attributable to the abnormally increased osmotic tension of the blood plasma and the fluids of the body in general; all or almost all of the substances which are forming urinary osmotic pressure —in an equal volume of water normally three times as large as that of the blood—are retained in the system.[7]

According to Landois,[8] the point of attack and the origin of the uremic convulsive phenomena is situated without any doubt in the psychomotor centers of the cortex cerebri. There is really nothing opposed to the view that the convulsions are caused by the same physical factors which give rise to similar phenomena after the injection of large amounts of stronger salt solutions. Landois, to be sure, alleges that the continuous irritation of some part of the central nervous system by the salts and excrementitious matters retained in the blood forms the premonitory stage of eclampsia. He bases his assumption upon experimental researches, in which he found that extractive matters and salts, applied upon the psychomotor centers of the cortex cerebri in dogs, call forth pronounced convulsive attacks resembling in all particulars the eclamptic or uremic convulsions in men. While Landois thus furnished conclusive evidence that the uremic convulsions take their origin in the external layer of the gray matter of the brain, he does not account satisfactorily for the mode of production of the continuous irritation. This, I conclude, may be accredited to the increased osmotic tension of the blood plasma and the body liquids in general.

56 East Seventy-sixth Street.

4. The blood of uremia, when injected into the circulation of animals, in spite of all precautions taken, does not exhibit the exact character which it possessed before its removal from the body: the nature of its toxicity may have changed to some degree, although phenomena analogous to those of uremia may be produced when it is injected. Certainly the introduction into the venous system of a comparatively small quantity of highly concentrated blood, or serum, can not there set up a similar high concentration of all the body fluids. On the other hand, the transfused blood may contain organic material which became obnoxious only after it had been removed from the organism. The serum of some convulsive patients appears to possess an abnormally high toxicity. This increased poisonousness is not exhibited by all uremic sera. I am of the opinion that such a serum attains virulency only after the blood has been removed from the body for some time. If the toxicity of uremic blood is to be determined, direct transfusion should be employed.

5. Ludwig Lindemann: Die Concentration des Harns und Blutes bei Nierenkrankheiten mit einen Beitrag zur Lehre von der Urämie: Deutsch. Arch. f. Klin. Med., 65, 1-80. (Referat von Andreasch in Jahres Bericht ueber die Fortschritte der Thier Chemie, etc., 1900.)

6. Lo sperimentale, 1887.

7. If complete anuria prevails so that no water at all is eliminated, a hydremic condition, as observed by some clinicians, may ensue, but only when the reactive stage has been reached. The general uremic attack is dependent on a high concentration of the blood.

8. Die Urämie, Zweite Auflage, 1891.

THE FIGHT AGAINST TUBERCULOSIS IN THE LIGHT OF THE EXPERIENCE GAINED IN SUCCESSFUL COMBAT OF OTHER INFECTIOUS DISEASES.*

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The task with which this Congress will have to busy itself is one of the most difficult, but it is also one in which labor is most sure of its reward.

I need not point again to the innumerable victims tuberculosis annually claims in all countries, nor to the boundless misery it brings on the families it attacks. You all know that there is no disease which inflicts such deep wounds on mankind as this. All the greater, however, would be the general joy and satisfaction if the efforts that are being made to rid mankind of this enemy, which consumes its inmost marrow, were crowned with success.

There are many, indeed, who doubt the possibility of successfully combating this disease, which has existed for thousands of years, and has spread all over the world. This is by no means my opinion. This is a conflict into which we may enter with a surely founded prospect of success, and I will tell you the reasons on which I base this conviction.

TUBERCULOSIS A PREVENTABLE DISEASE.

Only a few decades ago the real nature of tuberculosis was unknown to us; it was regarded as a consequence, as the expression, so to speak, of social misery, and, as this supposed cause could not be got rid of by simple means, people relied on the probable gradual improvement of social conditions, and did nothing. All this is altered now. We know that social misery does indeed go far to foster tuberculosis, but the real cause of the disease is a parasite—that is, a visible and palpable enemy, which we can pursue and annihilate, just as we can pursue and annihilate other parasitic enemies of mankind.

Strictly speaking, the fact that tuberculosis is a preventable disease ought to have become clear as soon as the tubercle bacillus was discovered, and the properties of this parasite and the manner of its transmission became known. I may add that I, for my part, was aware of the full significance of this discovery from the first, and so will everybody have been who had convinced himself of the causal relation between tuberculosis and the tubercle bacillus. But the strength of a small number of medical men was inadequate to the conflict with a disease so deeply rooted in our habits and customs. Such a conflict requires the co-operation of many, if

* An address delivered before a general meeting of the British Congress on Tuberculosis, London, July 23, and published concurrently with its appearance in the British Medical Journal, through courtesy of the Editor.

possible of all, medical men, shoulder to shoulder with the State and the whole population. The moment when such co-operation is possible seems now to have come. I suppose there is hardly any medical man now who denies the parasitic nature of tuberculosis, and among the non-medical public, too, the knowledge of the nature of the disease has been widely propagated.

Another favorable circumstance is that success has recently been achieved in combating several parasitic diseases, for we have learned from these examples how the conflict with pestilences is to be carried on.

SPECIAL PREVENTIVE MEASURES NEEDED FOR VARIOUS DISEASES.

The most important lesson we have learned from this experience is that it is a great blunder to treat pestilences according to a general scheme. This was done in former times; no matter whether the pestilence in question was cholera, plague, or leprosy; isolation, quarantine, useless disinfection were always resorted to. But now we know that every disease must be treated according to its own special individuality, and that the measures to be taken against it must be most accurately adapted to its special nature, to its etiology. We are entitled to hope for success in combating tuberculosis only if we keep this lesson constantly in view. As so very much depends just on this point, I shall take the liberty to illustrate it by several examples.

Plague.—The pestilence which is at this moment in the foreground of interest, the bubonic plague, may be instructive to us in several respects.

People used to act upon the conviction that a plague patient was in the highest degree a center of infection, and that the disease was transmitted only by plague patients and their belongings. Even the most recent international agreements are based on this conviction. Although, as compared with formerly, we now have the great advantage that we can, with the aid of the microscope and of experiments on animals, recognize every case of plague with absolute certainty, and although the prescribed inspection of ships, quarantine, the isolation of patients, the disinfection of infected dwellings and ships, are carried out with the utmost care, the plague has, nevertheless, been transmitted everywhere, and has in not a few places assumed grave dimensions. Why this has happened we know very well, owing to the experience quite recently gained as to the manner in which the plague is transmitted. It has been discovered that only those plague patients that suffer from plague-pneumonia—a condition which is fortunately infrequent—are centers of infection, and that the real transmitters of the plague are the rats. There is no longer any doubt that, in by far the majority of cases in which the plague has been transmitted by ocean traffic, the transmission took place by means of plague among the ship rats. It has also been found that wherever the rats were intentionally or unintentionally exterminated the plague rapidly disappeared; whereas at other places, where too little attention had been paid to the rat plague, the pestilence continued. This connection between the human plague and the rat plague was totally unknown before, so that no blame attaches to those who devised the measures now in force against the plague if these measures had proved unavailing. It is high time, however, that this enlarged knowledge of the etiology of plague be utilized in international as well as in other traffic. As human plague is so dependent on rat plague, it is intelligible that protective inoculation and the application of antitoxic serum have had so little effect. A certain number of human beings may have been saved from the disease by that, but the general spread of the pestilence has not been hindered in the least.

Cholera.—With cholera the case is essentially different; it may under certain circumstances be transmitted directly from human beings to other human beings, but its main and most dangerous propagator is water, and therefore, in the combating of cholera, water is the first thing to be considered. In Germany, where this principle has been acted on, we have succeeded for four years in regularly exterminating the pestilence (which was introduced again and again from the infected neighboring countries) without any obstruction of traffic.

Hydrophobia.—Hydrophia, too, is not void of instruction for us. Against this disease the so-called protective inoculation proper has proved eminently effective as a means of preventing the outbreak of the disease in persons already infected, but, of course, such a measure can do nothing to prevent infection itself. The only real way of combating this pestilence is by compulsory muzzling. In this matter also we have had the most satisfactory experience in Germany, but have at the same time seen that the total extermination of the pestilence can only be achieved by international measures, because hydrophobia, which can be very easily and rapidly suppressed, is always introduced again year after year from the neighboring countries.

Leprosy.—Permit me to mention only one other disease, because it is etiologically very closely akin to tuberculosis, and we can learn not a little for the furtherance of our aims from its successful combating. I mean leprosy. It is caused by a parasite which greatly resembles the tubercle bacillus. Just like tuberculosis, it does not break out till long after infection, and its course is almost slower. It is transmitted only from person to person, but only when they come into close contact, as in small dwellings and bedrooms. In this disease, accordingly, immediate transmission plays the main part; transmission by animals, water, or the like is out of the question. The combative measures, accordingly, must be directed against this close intercourse between the sick and the healthy. The only way to prevent this intercourse is to isolate the patients. This was most rigorously done in the Middle Ages by means of numerous leper houses, and the consequence was that leprosy, which had spread to an alarming extent, was completely stamped out in Central Europe. The same method has been adopted quite recently in Norway, where the segregation of lepers has been ordered by a special law. But it is extremely interesting to see how this law is carried out. It has been found that it is not at all necessary to execute it strictly, for the segregation of only the worst cases, and even of only a part of these, sufficed to produce a diminution of leprosy. Only so many infectious cases had to be sent to the leper houses that the number of fresh cases kept regularly diminishing from year to year. Consequently the stamping-out of the disease had lasted much longer than it would have lasted if every leper had been inexorably consigned to a leper house, as in the Middle Ages; but in this way, too, the same purpose is gained—slowly, indeed, but without any harshness.

SPUTUM THE MAIN SOURCE OF INFECTION IN TUBERCULOSIS.

These examples may suffice to show what I am driving at, which is to point out that, in combating pestilences, we must strike at the root of the evil, and must not

squander force in subordinate ineffective measures. Now the question is, what has hitherto been done, and what is about to be done against tuberculosis, really strikes the root of tuberculosis, so that it must sooner or later die.

In order to answer this question it is necessary first and foremost to inquire how infection takes place in tuberculosis. Of course, I presuppose that we understand by tuberculosis only those morbid conditions which are caused by the tubercle bacillus.

In by far the majority of cases of tuberculosis the disease has its seat in the lungs, and has also begun there. From this fact it is justly concluded that the germs of the disease, that is, the tubercle bacilli, must have got into the lungs by inhalation. As to the question where the inhaled tubercle bacilli have come from, there is also no doubt. On the contrary, we know with certainty that they get into the air with the sputum of consumptive patients. This sputum, especially in advanced stages of the disease, almost always contains tubercle bacilli, sometimes in incredible quantities. By coughing, and even speaking, it is flung into the air in little drops, that is, in a moist condition, and can at once infect persons who happen to be near the coughers. But it may also be pulverized when dried, in the linen or on the floor, for instance, and get into the air in the form of dust.

In this manner a complete circle, a so-called *circulus vitiosus*, has been formed for the process of infection from the diseased lung, which produces phlegm and pus containing tubercle bacilli, to the formation of moist and dry particles (which, in virtue of their smallness, can keep floating a good while in the air), and finally to new infection, if particles penetrate with the air into a healthy lung and originate the disease anew. But the tubercle bacilli may get to other organs of the body in the same way, and thus originate other forms of tuberculosis. This, however, is considerably rarer. The sputum of consumptive people, then, is to be regarded as the main source of the infection of tuberculosis. On this point, I suppose, we are all agreed. The question now arises whether there are not other sources too, copious enough to demand consideration in the combating of tuberculosis.

Great importance used to be attached to the hereditary transmission of tuberculosis. Now, however, it has been demonstrated by thorough investigation that, though hereditary tuberculosis is not absolutely nonexistent, it is nevertheless extremely rare, and we are at liberty, in considering our practical measures, to leave this form of origination entirely out of account.

DIFFERENCES BETWEEN HUMAN AND BOVINE TUBERCULOSIS.

But another possibility of tuberculous infection exists, as is generally assumed, in the transmission of the germs of the disease from tuberculous animals to man. This manner of infection is generally regarded nowadays as proved, and as so frequent that it is even looked upon by not a few as the most important, and the most rigorous measures are demanded against it. In this Congress also the discussion of the danger with which the tuberculosis of animals threatens man will play an important part. Now, as my investigations have led me to form an opinion deviating from that which is generally accepted, I beg your permission, in consideration of the great importance of this question, to discuss it a little more thoroughly.

Genuine tuberculosis has hitherto been observed in almost all domestic animals, and most frequently in poultry and cattle. The tuberculosis of poultry, however, differs so much from human tuberculosis that we may leave it out of account as a possible source of infection for man. So, strictly speaking, the only kind of tuberculosis remaining to be considered is the tuberculosis of cattle, which, if really transferable to man, would indeed have frequent opportunities of infecting human beings through the drinking of the milk and the eating of the flesh of diseased animals.

Even in my first circumstantial publication on the etiology of tuberculosis I expressed myself regarding the identity of human tuberculosis and bovine tuberculosis with reserve. Proved facts, which would have enabled me to sharply distinguish these two forms of the disease, were not then at my disposal, but sure proofs of their absolute identity were equally undiscoverable, and I therefore had to leave this question undecided. In order to decide it, I have repeatedly resumed the investigations relating to it, but so long as I experimented on small animals, such as rabbits and guinea-pigs, I failed to arrive at any satisfactory result, though indications which rendered the difference of the two forms of tuberculosis probably were not wanting. Not till the complaisance of the Ministry of Agriculture enabled me to experiment on cattle, the only animals really suitable for these investigations, did I arrive at absolutely conclusive results. Of the experiments which I have carried out during the last two years, along with Professor Schütz, of the Veterinary College in Berlin, I will tell you briefly some of the most important.

A number of young cattle which had stood the tuberculin test, and might therefore be regarded as free from tuberculosis, were infected in various ways with tubercle bacilli taken from cases of human tuberculosis; some of them got the tuberculous sputum of consumptive patients direct. In some cases the tubercle bacilli or the sputum were injected under the skin, in others into the peritoneal cavity, in others into the jugular vein. Six animals were fed with tuberculous sputum almost daily for seven or eight months; four repeatedly inhaled great quantities of bacilli, which were distributed in water, and scattered with it in the form of spray. None of these cattle (there were nineteen of them) showed any symptoms of disease, and they gained considerably in weight. From six to eight months after the beginning of the experiments they were killed. In their internal organs not a trace of tuberculosis was found. Only at the places where the injections had been made small suppurative foci had formed, in which few tubercle bacilli could be found. This is exactly what one finds when one injects dead tubercle bacilli under the skin of animals liable to contagion. So the animals we experimented on were affected by the living bacilli of human tuberculosis exactly as they would have been by dead ones; they were absolutely insusceptible to them.

The result was utterly different, however, when the same experiment was made on cattle free from tuberculosis with tubercle bacilli that came from the lungs of an animal suffering from bovine tuberculosis. After an incubation period of about a week the severest tuberculous disorders of the internal organs broke out in all the infected animals. It was all one whether the infecting matter had been injected only under the skin, or into the peritoneal cavity or the vascular system. High fever seat in, and the animals became weak and lean;

some of them died after a month and a half to two months, others were killed in a miserably sick condition after three months. After death, extensive tuberculous infiltrations were found at the place where the injections had been made, and in the neighboring lymphatic glands, and also far advanced alterations of the internal organs, especially the lungs and the spleen. In the cases in which the injection had been made into the peritoneal cavity the tuberculous growths which are so characteristic of bovine tuberculosis were found on the omentum and peritoneum. In short, the cattle proved just as susceptible to infection by the bacillus of bovine tuberculosis as they had proved insusceptible to infection by the bacillus of human tuberculosis. I wish only to add that preparations of the organs of the cattle which were artificially infected with bovine tuberculosis in these experiments are exhibited in the Museum of Pathology and Bacteriology.

An almost equally striking distinction between human and bovine tuberculosis was brought to light by a feeding experiment with swine. Six young swine were fed daily for three months with the tuberculous sputum of consumptive patients. Six other swine received bacilli of bovine tuberculosis with their daily food for the same period. The animals that were fed with the sputum remained healthy and grew lustily, whereas those that were fed with the bacilli of bovine tuberculosis soon became sickly, were stunted in their growth, and half of them died. After three months and a half the surviving swine were all killed and examined. Among the animals that had been fed with sputum no trace of tuberculosis was found, except here and there little nodules in the lymphatic glands of the neck, and in one case a few gray nodules in the lungs. The animals, on the other hand, which had eaten the bacilli of bovine tuberculosis had, without exception (just as in the cattle experiment), severe tuberculous diseases, especially tubercular infiltration of the greatly enlarged lymphatic glands of the neck and of the mesenteric glands, and also extensive tuberculosis of the lungs and the spleen.

The difference between human and bovine tuberculosis appeared not less strikingly in a similar experiment with asses, sheep, and goats, into whose vascular systems the two kinds of tubercle bacilli were injected.

Our experiments, I must add, are not the only ones that have led to this result. If one studies the older literature of the subject, and collates the reports of the numerous experiments that were made in former times by Chauveau, Günther and Harms, Bollinger and others, who fed calves, swine, and goats with tuberculous material, one finds that the animals that were fed with milk and pieces of the lungs of tuberculous cattle always fell ill of tuberculosis, whereas those that received human material with their food did not. Comparative investigations regarding human and bovine tuberculosis have been made very recently in North America by Smith, Dinwiddie, Frothingham, and Repp, and their result agreed with ours. The unambiguous and absolutely conclusive results of our experiments is due to the fact that we chose methods of infection which exclude all sources of error, and carefully avoided everything connected with the stalling, feeding, and tending of the animals that might have a disturbing effect on the experiments.

Considering all these facts, I feel justified in maintaining that human tuberculosis differs from bovine, and can not be transmitted to cattle. It seems to me very desirable, however, that these experiments should be repeated elsewhere, in order that all doubt as to the correctness of my assertion may be removed.

I wish only to add that, owing to the great importance of this matter, our government has resolved to appoint a commission to make further inquiries on the subject.

IS MAN SUSCEPTIBLE TO BOVINE TUBERCULOSIS?

But, now, how is it with the susceptibility of man to bovine tuberculosis? This question is far more important to us than that of the susceptibility of cattle to human tuberculosis, highly important as that is, too. It is impossible to give this question a direct answer, because, of course, the experimental investigation of it with human beings is out of the question. Indirectly, however, we can try to approach it. It is well known that the milk and butter consumed in great cities very often contain large quantities of the bacilli of bovine tuberculosis in a living condition, as the numerous infection experiments with such dairy products on animals have proved. Most of the inhabitants of such cities daily consume such living and perfectly virulent bacilli of bovine tuberculosis, and unintentionally carry out the experiment which we are not at liberty to make. If the bacilli of bovine tuberculosis were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle bacilli could not but occur among the inhabitants of great cities, especially the children. And most medical men believe that this is actually the case.

In reality, however, it is not so. That a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first—that is, when a so-called primary tuberculosis of the intestine is found. But such cases are extremely rare. Among many cases of tuberculosis examined after death, I myself remember having seen primary tuberculosis of the intestine only twice. Among the great postmortem material of the Charitè Hospital in Berlin ten cases of primary tuberculosis of the intestine occurred in five years. Among 933 cases of tuberculosis in children at the Emperor Frederick's Hospital for Children, Baginsky never found tuberculosis of the intestine without simultaneous disease of the lungs and the bronchial glands. Among 3104 postmortem examinations of tuberculous children, Biedert observed only sixteen cases of primary tuberculosis of the intestine. I could cite from the literature of the subject many more statistics of the same kind, all indubitably showing that primary tuberculosis of the intestine, especially among children, is a comparatively rare disease, and of these few cases that have been enumerated it is by no means certain that they were due to infection by bovine tuberculosis. It is just as likely that they were caused by the widely-propagated bacilli of human tuberculosis, which may have got into the digestive canal in some way or other—for instance, by swallowing saliva from the mouth. Hitherto nobody could decide with certainty in such a case whether the tuberculosis of the intestine was of human or animal origin. Now we can make the diagnosis. All that is necessary is to cultivate in pure culture the tubercle bacilli found in the tuberculous material, and to ascertain whether they belong to bovine tuberculosis by inoculating cattle with them. For this purpose I recommend subcutaneous injection, which yields quite specially characteristic and convincing results. For half a year past I have occupied myself with such investigations, but, owing to the rareness of the disease in question, the number of the cases I

have been able to investigate is but small. What has hitherto resulted from this investigation does not support the assumption that bovine tuberculosis occurs in man.

Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless already at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle, and the butter made of their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it.

HUMAN SPUTUM THE MAIN SOURCE OF HUMAN TUBERCULOSIS.

So the only main source of the infection of tuberculosis is the sputum of consumptive patients, and the measures for the combating of tuberculosis must aim at the prevention of the dangers arising from its diffusion. Well, what is to be done in this direction? Several ways are open. One's first thought might be to consign all persons suffering from tuberculosis of the lungs, whose sputum contains tubercle bacilli, to suitable establishments. This, however, is not only absolutely impracticable, but also unnecessary. For a consumptive who coughs out tubercle bacilli is not necessarily a source of infection on that account, so long as he takes care that his sputum is properly removed and rendered innocuous. This is certainly true of very many patients, especially in the first stages, and also of those who belong to the well-to-do classes, and are able to procure the necessary nursing. But how is it with people of very small means? Every medical man who has often entered the dwellings of the poor, and I can speak on this point from my own experience, knows how sad is the lot of consumptives and their families there. The whole family have to live in one or two small, ill-ventilated rooms. The patient is left without the nursing he needs, because the able-bodied members of the family must go to their work. How can the necessary cleanliness be secured under such circumstances? How is such a helpless patient to remove his sputum, so that it may do no harm? But let us go a step further and picture the condition of a poor consumptive patient's dwelling at night. The whole family sleep crowded together in one small room. However cautious he may be, the sufferer scatters the morbid matter secreted by his diseased lungs every time he coughs, and his relatives close beside him must inhale this poison. Thus whole families are infected. They die out, and awaken in the minds of those who do not know the infectiousness of tuberculosis the opinion that it is hereditary, whereas its transmission in the cases in question was due solely to the simplest process of infection, which do not strike people so much, because the consequences do not appear at once, but generally only after the lapse of years.

FOCI OF TUBERCULOUS INFECTION.

Often, under such circumstances, the infection is not restricted to a single family, but spreads in densely inhabited tenement houses to the neighbors, and then, as the admirable investigations of Biggs have shown in the case of the densely-peopled parts of New York, regular nests of foci of disease are formed. But, if one investigates these matters more thoroughly, one finds that it is not poverty *per se* that favors tuberculosis, but the bad domestic conditions under which the poor everywhere, but especially in great cities, have to live. For, as the German statistics show, tuberculosis is less frequent, even among the poor, when the population is not densely packed together, and may attain very great dimensions among a well-to-do population when the domestic conditions, especially as regards the bedrooms, are bad, as is the case, for instance, among the inhabitants of the North Sea Coast. So it is the overcrowded dwellings of the poor that we have to regard as the real breeding places of tuberculosis; it is out of them that the disease always crops up anew, and it is to the abolition of these conditions that we must first and foremost direct our attention if we wish to attack the evil at its root, and to wage war against it with effective weapons.

This being so, it is very gratifying to see how efforts are being made in almost all countries to improve the domestic conditions of the poor. I am also convinced that these efforts, which must be promoted in every way, will lead to a considerable diminution of tuberculosis. But a long time must elapse ere essential changes can be effected in this direction, and much may be done meanwhile in order to reach the goal much more rapidly.

THE NEED FOR HOSPITALS FOR CONSUMPTIVES.

If we are not able at present to get rid of the danger which small and overcrowded dwellings involve, all we can do is to remove the patients from them, and, in their own interests and that of the people about them, to lodge them better; and this can be done only in suitable hospitals. But the thought of attaining this end by compulsion of any kind is very far from me; what I want is that they may be enabled to obtain the nursing they need better than they can obtain it now. At present a consumptive in an advanced stage of the disease is regarded as incurable and as an unsuitable inmate for a hospital. The consequence is that he is reluctantly admitted and dismissed as soon as possible. The patient, too, when the treatment seems to him to produce no improvement, and the expenses, owing to the long duration of his illness, weigh heavily upon him, is himself animated by the wish to leave the hospital soon. That would be altogether altered if we had special hospitals for consumptives, and if the patients were taken care of there for nothing, or at least at a very moderate rate. To such hospitals they would willingly go; they could be better treated and fed there than is now the case. I know very well that the execution of the project will have great difficulties to contend with, owing to the considerable outlay it entails. But very much would be gained if, at least in the existing hospitals, which have to admit a great number of consumptives at any rate, special wards were established for them in which pecuniary facilities would be offered them. If only a considerable fraction of the whole number of consumptives were suitably lodged in this way, a diminution of infection, and consequently of the sum total of tuberculosis, could not fail to be the result. Permit me to remind you in this connection of what I said about leprosy. In the combating of that disease also great progress has already been made by lodging only a fair number of the patients in hospitals. The only country that possesses a considerable number of special hospitals for tuberculous patients is England, and there can be no doubt that the diminution of tuberculosis in England, which is much greater than in any other country, is greatly due to this circumstance. I should point to

the founding of special hospitals for consumptives and the better utilization of the already existing hospitals for the lodging of consumptives as the most important measures in the combating of tuberculosis, and its execution opens a wide field of activity to the State, to municipalities, and to private benevolence. There are many people who possess great wealth, and would willingly give of their superfluity for the benefit of their poor and heavily afflicted fellow creatures, but do not know how to do this in a judicious manner. Here is an opportunity for them to render a real and lasting service by founding consumption hospitals or purchasing the right to have a certain number of consumptive patients maintained in special wards of other hospitals free of expense.

As, however, unfortunately, the aid of the State, the municipalities, and rich benefactors will probably not be forthcoming for a long time yet, we must for the present resort to other measures that may pave the way for the main measure just referred to, and serve as a supplement and temporary substitute for it.

NOTIFICATION.

Among such measures I regard obligatory notification as specially valuable. In the combating of all infectious diseases it has proved indispensable as a means of obtaining certain knowledge as to their state, especially their dissemination, their increase and decrease. In the conflict with tuberculosis also we can not dispense with obligatory notification; we need it not only to inform ourselves as to the dissemination of this disease, but mainly in order to learn where help and instruction can be given, and especially where the disinfection which is so urgently necessary when consumptives die or change their residences has to be effected. Fortunately it is not at all necessary to notify all cases of tuberculosis, nor even all cases of consumption, but only those which, owing to the domestic conditions, are sources of danger to the people about them. Such limited notification has already been introduced in various places in Norway, for instance, by a special law, in Saxony by a ministerial decree, in New York and in several American towns, which have followed its example. In New York, where notification was optional at first and was afterwards made obligatory, it has proved eminently useful. It has thus been proved that the evils which it used to be feared the introduction of notification for tuberculosis would bring about need not occur, and it is devoutly to be wished that the examples I have named may very soon excite emulation everywhere.

DISINFECTION.

There is another measure, closely connected with notification—namely, disinfection, which, as already mentioned, must be effected when consumptives die or change their residence, in order that those who next occupy the infected dwelling may be protected against infection. Moreover, not only the dwellings but also the infected beds and clothes of consumptives ought to be disinfected.

EDUCATION OF THE PUBLIC.

A further measure, already recognized on all hands as effective, is the instructing of all classes of the people as to the infectiousness of tuberculosis, and the best way of protecting oneself. The fact that tuberculosis has considerably diminished in almost all civilized states of late is attributable solely to the circumstance that knowledge of the contagious character of tuberculosis has been more and more widely disseminated, and that caution in intercourse with consumptives has increased more and more in consequence. If better knowledge of the nature of tuberculosis has alone sufficed to prevent a large number of cases, this must serve us as a significant admonition to make the greatest possible use of this means, and to do more and more to bring it about that everybody may know the dangers that threaten him in intercourse with consumptives. It is only to be desired that the instructions may be made shorter and more precise than they generally are, and that special emphasis be laid on the avoidance of the worst danger of infection, which is the use of bedrooms and small, ill-ventilated workrooms simultaneously with consumptives. Of course, the instruction must include directions as to what consumptives have to do when they cough and how they are to treat their sputum.

SANATORIA.

Another measure which has come into the foreground of late, and which at this moment plays to a certain extent a paramount part in all efforts for the combating of tuberculosis, works in quite another direction. I mean the founding of sanatoria for consumptives.

That tuberculosis is curable in its early stages must be regarded as an undisputed fact. The idea of curing as many tuberculous patients as possible in order to reduce the number of those that reach the infectious stage of consumption, and thus to reduce the number of fresh cases, was therefore a very natural one. The only question is whether the number of persons cured in this way will be great enough to exercise an appreciable influence on the retrogression of tuberculosis. I will try to answer this question in the light of the figures at my disposal.

According to the business report of the German Central Committee for the Establishment of Sanatoria for the Cure of Consumptives, about 5500 beds will be at the disposal of these institutions by the end of 1901, and then, if we assume that the average stay of each patient will be three months, it will be possible to treat at least 20,000 patients every year. From the reports hitherto issued as to the results that have been achieved in the establishments we learn further that about 20 per cent. of the patients that have tubercle bacilli in their sputum lose them by the treatment there. This is the only sure test of success, especially as regards prophylaxis. If we make this the basis of our estimates, we find that 4000 consumptives will leave these establishments annually as cured. But, according to the statistics ascertained by the German Imperial Office of Health, there are 226,000 persons in Germany over 15 years of age who are so far gone in consumption that hospital treatment is necessary for them. Compared with this great number of consumptives, the success of the establishments in question seems so small that a material influence on the retrogression of tuberculosis in general is not yet to be expected of them. But pray do not imagine that I wish, by this calculation of mine, to oppose the movement for the establishment of such sanatoria in any way. I only wish to warn against an over-estimation of their importance which has recently been observable in various quarters, based apparently on the opinion that the war against tuberculosis can be waged by means of sanatoria alone, and that other measures are of subordinate value. In reality the contrary is the case. What is to be achieved by the general prophylaxis resulting from recognition of the danger

of infection and the consequent greater caution in intercourse with consumptives is shown by a calculation of Cornet's regarding the decrease of mortality from tuberculosis in Prussia in the years 1889 to 1897. Before 1889 the average was 31.4 per 10,000, whereas in the period named it sank to 21.8, which means that, in that short space of time, the number of deaths from tuberculosis was 184,000 less than was to be expected from the average of the preceding years. In New York, under the influence of the general sanitary measures directed in a simple exemplary manner by Biggs, the mortality from tuberculosis has diminished by more than 35 per cent. since 1886; and it must be remembered that both in Prussia and in New York the progress indicated by these figures is due to the first beginnings of these measures. Considerably greater success is to be expected of their further development. Biggs hopes to have got so far in five years that in the city of New York alone the annual number of deaths from tuberculosis will be 3000 less than formerly.

Now, I do indeed believe that it will be possible to render the sanatoria considerably more efficient. If strict care be taken that only patients be admitted for whom the treatment of those establishments is well adapted, and if the duration of the treatment be prolonged, it will certainly be possible to cure 50 per cent., and perhaps still more. But even then, and even if the number of sanatoria be greatly increased, the total effect will always remain but moderate. The sanatoria will never render the other measures I have mentioned superfluous. If their number become great, however, and if they perform their functions properly, they may materially aid the strictly sanitary measures in the conflict with tuberculosis.

CONCLUSION.

If now, in conclusion, we glance back once more to what has been done hitherto for the combating of tuberculosis, and forward to what has still to be done, we are at liberty to declare with a certain satisfaction that very promising beginnings have already been made. Among these I reckon the consumption hospitals of England, the legal regulations regarding notification in Norway and Saxony, the organization created by Biggs in New York—the study and imitation of which I most urgently recommend to all municipal sanitary authorities—the sanatoria, and the instruction of the people. All that is necessary is to go on developing these beginnings, to test, and if possible to increase their influence on the diminution of tuberculosis, and wherever nothing has yet been done, to follow the examples set elsewhere.

If we allow ourselves to be continually guided in this enterprise by the spirit of genuine preventive medical science, if we utilize the experience gained in conflict with other pestilences, and aim, with clear recognition of the purpose and resolute avoidance of wrong roads, at striking the evil at its root, then the battle against tuberculosis, which has been so energetically begun, can not fail to have a victorious issue.

Medical Tours.—For several years the French physicians have organized an annual tour to the various watering-places and spas in France as a trip combining both pleasure and instruction. The Germans are now following their example and two tours are announced, one to be in charge of Baginsky to embrace the saline springs of middle Germany, and the other, personally conducted by von Leyden and Liebreich, by a boat to the watering-places on the North Sea, the first in August, the second toward the end of September. It is proposed to make similar trips an annual institution.

Clinical Reports.

RESECTION OF THE CECUM.

J. H. STEALY, M.D.
FREEPORT, ILL.

In January, 1900, Miss S. presented herself to me complaining of severe and almost constant pain in the right iliac region, and also of persistent constipation, which latter condition at times amounted to obturation. The previous history was negative, the patient having no memory of former illness, nor of intestinal or other disease. The present trouble dated back three years, the pain, constipation, and tendency to obstipation having been the only symptoms complained of. At the time of my first examination she was anemic and slowly losing in weight, but otherwise appeared in reasonably good condition. A tumor, about the size of a small orange, indurated, and with no range of mobility, was made out in the right iliac region. The abdominal muscles were perfectly relaxed. In view of these findings and the progressing nature of the symptoms operation was decided upon.

An incision was made through the right rectus muscle, exposing the mass, which was found to involve the lower three inches of the colon, the cecum, the appendix, which was so involved as to make its identification a matter of extreme difficulty, and three or four inches of the ileum, being at the same time very adherent to the antero-lateral parietes, as well as to the surrounding intestines. The mass was released from its adhesions and excised by resecting the colon four inches above the ileo-cecal valve, and the ileum was severed at an equal distance from the valve. Evidences of glandular metastases were sought, but none found. The No. 3 Murphy button was inserted and held by the usual purse-string suture through both segments, and, although the lumina of the distal and proximal portions differed greatly as to caliber, it was not found necessary to attempt to reduce the size of the lumen of the portion of colon to be anastomosed, no difficulty being experienced in securing a close and perfect approximation of the ends. The line of union was reinforced by a few Lembert sutures and a wick drain inserted. Recovery was without incident, no tympanites or other untoward symptoms having developed, and at no time did the temperature rise above 100. Nourishment was withheld until the fourth day, at which time rectal alimentation was inaugurated, which was maintained for four days more, following which, liquid food was given until the twelfth day, when the button passed. Microscopic examination showed the mass to be old connective tissue.

This case well illustrates the applicability of the ordinary unmodified Murphy button to the resection of intestines of differing lumina, without any preliminary stitching of the larger bowel to reduce its caliber, which must necessarily consume that time, which is such an important factor in successful abdominal surgery.

A LARGE GALLSTONE.

A. L. RUSSELL, M.D.
MIDWAY, PA.

I recently removed, post-mortem, a gallstone from a lady aged 67 years; the stone measuring five and three-quarter by four and a half inches, and weighing 530 grains. The patient died from tubal rupture incident to carcinoma of the uterus, and had never complained of symptoms referable to the gall bladder, though she had been under my care for two years for the uterine growth. Great obesity, an enlarged liver, and absence of symptoms or complaint allowed this feature of the case to go unnoticed. I believe this to be an unusually large specimen.

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PROFESSOR KOCH'S ADDRESS.

The address of Professor Koch, delivered at the British Congress on Tuberculosis on the 23d, and which appears in this issue, is a noteworthy production in several respects. In the first place, any utterance by the discoverer of the tubercle germ, whose name has been intimately associated with acquisitions to our knowledge of the disease, would demand attention, and all the more so now since his views here expressed strike at some of the accepted dogmas, as it were, of the tuberculosis specialists.

It has been taken as a matter of fundamental belief by most of these that the dangers to the human species from tuberculosis in the lower animals, and especially from bovine tuberculosis, are real and formidable, and some have magnified the perils from ingested milk and flesh of diseased animals almost above those from aerial infection by the tuberculosis germ. A few bacteriologists and veterinarians have expressed doubts as to this danger or have reported facts that seemed to point to its minor significance, but they have had on the whole but little influence on the professional views of the majority. The desirability of more facts on this point, as well as the need of more conservatism of statement on the part of advocates of the transmissibility of bovine tuberculosis to man, has been editorially noticed by THE JOURNAL in an earlier issue,[1] where attention was called to the lack of evidence in support of the accepted views. In this address Professor Koch puts himself fairly on the side of the minority and it will be of interest to see how far the dictum of this coryphaeus can swing the pendulum of medical popular opinion on that particular phase of the subject. We shall naturally look for some expression of contrary views, especially since the subjects of tuberculous meat and milk are on the program.

As the discoverer of the tuberculosis germ and one who is identified so largely as a bacteriologist with the germ theory of disease we would naturally expect Professor Koch to attribute the first importance to the direct action of the bacillus. It is possible, however, that he has allowed too little for systemic conditions, and especially the congenital lack of resistance, call it hereditary or not, that we see in the families and descendants of the victims of tuberculosis. The seed is important, but the soil is equally so, and the former is, in the opinion of many competent authorities, far more nearly ubiquitous than the latter. Koch's caution as to the exaggeration of the importance of sanatorium treatment is a timely one; it needs merely the statement of the figures he gives to demonstrate this.

The address as a whole is one that in its general tone will not be out of accord with what we hope will be the spirit of the Congress, that is, a conservative and reasonable one, avoiding the extremes to which the discussions and treatment of this subject of tuberculosis have too often gone.

1. Jan. 27, 1900, xxxiv, p. 238.

THE EFFECT OF VASOMOTOR INFLUENCES—ESPECIALLY OF THERMIC ORIGIN—ON THE CONSTITUTION OF THE BLOOD.

Most conflicting conclusions have been reached as a result of investigations by different observers into the influence of thermal agencies applied to the surface of the body upon the constitution of the blood. Thus, a reduction in the number of blood-corpuscles, that is, a diminution in the density of the blood, in the affected capillary area and the reverse conditions in the rest of the body have been found as a result of cold baths; and an increase in the number of corpuscles, that is an increase in the density of the blood in the affected capillary area and the reverse conditions in the remainder of the body as a result of the action of heat. Precisely opposite results are described by others, although all are agreed that the changes are but transitory. Equal differences of opinion exist with reference to the explanation of the phenomena observed, which by some are attributed to alteration in the distribution of the blood, or the removal of stasis, while others ascribe them to a decrease or an increase in the amount of water present in the affected capillary area. The leucocytes likewise have by some been found increased and by others diminished in number.

In an endeavor to clear up in some degree the existing confusion, Dr. Ernst Becker[1] undertook a careful enumeration of the red and white blood-corpuscles in a series of cases, some of which were exposed to a cold douche of short duration and others to a cold bath of longer duration. Comparative observations were also made of blood from the median vein. It appeared that the number of red and white blood-corpuscles is, under normal conditions, approximately the same in the capillaries and the related veins. As a result of the influence of cold upon the entire surface of the body an increase in the number of red and white blood-corpuscles was found in the capillaries of the skin, more marked with relation to the leucocytes. An increase in the number of erythrocytes was demonstrable likewise in the veins, while the number of leucocytes was generally diminished, and always distinctly less after the action of cold than in the related capillaries. These changes had almost wholly disappeared in the course of an hour, when often there was a reduction in the

1. Deutsches Archiv f. Klin. Medicin, 70 B., 1. u. 2 H., S. 17.

number of red corpuscles, even as compared with the condition prior to the application of cold.

The results described are, it is thought, due to two distinct influences, namely, the effect upon the blood in general, as a whole, and a special effect upon the leucocytes. As a result of contraction of the vessels in consequence of vasomotor influences, positive pressure is exerted and the blood is forced through the capillaries into the veins, while blood-serum escapes in part into the tissues. On the other hand, when dilatation of the blood-vessels occurs in consequence of vasomotor paresis, serum conversely is taken up from the tissue. As a result of the influence of cold the leucocytes are retained in the capillaries and form layers upon the walls of the vessels.

From the foregoing, it would appear that as a result of the action of cold upon the entire surface of the body there occurs a slight increase in the number of erythrocytes and generally a marked increase in the number of leucocytes in the capillaries of the skin. These changes in the constitution of the blood are due in part to vasomotor influences and especially to the loss of water from the blood and in lesser degree also to stasis of blood-cells in the capillaries. The increase in the number of leucocytes results besides and in largest measure from the formation of layers upon the vessel-wall in consequence of the action of cold. Under pathologic conditions the changes in the constitution of the blood may be explained also in part by the removal of stasis in limited degree.

THE HEATED TERM.

The present heated term, surpassing as it does all records in many sections of our country, is a matter of interest to physicians. It directly affects the mortality statistics, and would yet more affect those of morbidity were they available. It is, however, to be remembered that it is not necessarily so much the temperature itself as the environment in which it is experienced that affects these figures. Aside from infant sickness and mortality, which to some extent is another story, it is doubtful whether any degree of solar heat felt in ordinary temperate climates is not endurable with comparative comfort and safety, if the means for protection available are employed.

The average healthy adult in the country endures easily hard outdoor work at a temperature that strikes down hundreds in the crowded cities. A sunstroke or even a heat prostration is rare in the harvest field, where men and boys work in sweat-saturated clothing under a blazing sun often at a temperature well above the hundred mark. It is among the degenerates, the physically feeble, the ill-nourished and ill-lodged and intemperate in the great centers that the heat prostrations and other serious results of the heated term are most observed. The greatest aggregate of cost, aside from the effects on the crops, is in the human discomfort—to use the mildest term—that it produces. This is in proportion to the lack of experience of such temperatures; in our northern regions we are ill prepared for prolonged spells of such extreme heat and the known vicissitudes of the climate make us timid in providing for it. It has been said that in the lake region one needs both an ulster and a palm-leaf fan to meet the possible exigencies of a day's outing; the tropical outfit required for our recent experiences is an unknown quantity. Much depends upon the state of mind, as to whether one suffers or not. An idle day with nothing to do but to keep cool, generally taxes all one's philosophy, with the thermometer near 100 and a dash of humidity in the atmosphere to keep down radiation and rub it in. The question whether life is worth living then comes home to us.

Making the best of it, however, the present heated term is a serious matter in many ways. It is not alone in deaths it has caused, for, as already hinted, it probably has more credited to it directly than is its due, but also in the injury to the agricultural interests it promises, and in a hundred other possible ways. What effects on the health of the community will ensue can hardly be foretold, but it is likely it will be more or less debilitating to a large number of persons whose systems are not in a fit state to meet such extremes, and it will be especially trying to infants. The average adult who can avoid bodily exposure and mental strain, who eats only wholesome food and that in moderate quantity, keeps clean, avoids overheating, and chills, and does not stimulate with alcoholics, need not usually worry about his health in a heated term. Man was originally a tropical animal and if he can keep a pathogenic flora and fauna out of his system he can thrive under tropical heat.

ELECTROLYTIC DISSOCIATION OF INORGANIC SALTS INTO IONS.

The recent visit to this country of the great physical chemist, Van't Hoff, professor of physical chemistry in the University of Berlin, and the fact that honorary degrees were conferred upon him by the University of Chicago and Harvard University, may serve to recall briefly and in general elementary terms some part of the more important services rendered to medicine through his epochal investigations in pure physical chemistry, and those of others. The application of the theory of electrolytic dissociation to the study of life phenomena and of certain fundamental problems in physiology is sure to lead to its further application to pharmacologic and pathologic problems, and thus it will come to be a matter of direct, practical interest to the physician.

The development of the theory of electrolytic dissociation starts with the discovery by Traube of precipitation membranes, which permit water to pass through, but are impermeable to some sub-

stances dissolved in water. Then, Pfeffer, by allowing the precipitation to take place in the walls of vessels of earthenware, secured for the membrane sufficient support so that measurements could be made of the force with which water passes into solutions of various kinds in cups clothed by semipermeable membranes and immersed in water. The resulting pressure is known as "osmotic pressure," and is nearly proportional to the concentration of, i. e., the number of molecules in, a given solution. Pfeffer also pointed out that the walls of cells are semipermeable, thus explaining why vegetable cells burst when placed in water or in solutions of less concentration than the cell contents. Van't Hoff then showed that the osmotic pressure of a substance in solution equals the pressure when the same amount is volatilized and confined to the same volume as the solution. Furthermore, that equal volumes of all solutions at the same temperature and the same osmotic pressure contain the same number of molecules. To this last law a number of exceptions were soon met, especially in the case of solutions of acids, bases and salts, the pressure being greater, the boiling point higher, and the freezing point lower than warranted by the number of molecules present in the solutions. Now Arrhenius showed that the solutions which conduct electricity are the same as those that form exceptions to Van't Hoff's law, and so Arrhenius concluded that in electrolytic solutions the substances dissolved are split up into simple substances or parts, each of which acts as a molecule, making the osmotic pressure greater than indicated by the formula of the original substance.

This is the theory of electrolytic dissociation; the dissociation results in a splitting of the substances dissolved into particles or elements, called ions, charged either with positive or negative electricity. The greater the dilution up to certain limits, the greater the dissociation, and the greater the electric conductivity. Ordinarily, dissociation is complete when the weight of one molecule of an inorganic salt expressed in grams is dissolved in 1000 liters of water (gram-molecular solution). In sufficiently dilute electrolytic solutions there are ions charged with positive electricity—*cathions*—and ions charged with positive electricity—*anions*. Thus, sodium chlorid is split into Na -ions an Cl -ions, also written Na+ and Cl—. Hence, aqueous solutions of electrolytes acquire special properties due to the character of the ions which they contain, and it is the study of ions in relation to experimental morphology and to physiology that has resulted in a number of exceedingly important discoveries during the last years, to which reference has already been made in these columns.

BRONCHO-TYPHOID FEVER.—Albarel describes, in the *Montpellier Med.* of April 14, a small epidemic of typhoid fever in which the lesions were exclusively limited to the bronchi and the disease was diagnosed acute tuberculosis. The patients were children, and recovered in the usual period for typhoid fever.

THE KANSAS LAW AND MEDICAL PRETENDERS.

The new Kansas medical registration law is, it is said, bringing to light a vast amount of disreputable qualifications, including diplomas from "fake" colleges, from some that never existed and from others with no instructors, whose sole function is to supply a sheepskin at such price as can be obtained, after the fashion of Armstrong, etc. One so-called school of practice, it is said, demanded that members of its state society should be given licenses on presentation of the certificates issued by the society to the members. Failing in this it demanded representation on the registration board, and threatened legal proceedings when this was refused by the governor. Thus far, however, their suit has not been instituted. Kansas has been so long a free ground for all sorts of irregular practitioners and quacks of every kind that it is very much as might have been expected; the new law is bringing a surplus of them to light. It is unfortunate also that it has a time clause which permits so many of them to continue to practice upon the ignorance and credulity of the public.

THE BRITISH MEDICAL ASSOCIATION.

The British Medical Association meets next week in Cheltenham. The Council in its report calls attention to the fact that it is sixty-three years since the Association met there before, and also to the coincidence that the previous meeting was held in the same year that Queen Victoria ascended the throne, and that this meeting is held in the year of the accession of her successor. The membership of the Association has increased only 20 during the year. The number of members last year was 18,382. During the year 1010 new members have been elected, 238 have died, and 752 have either resigned or been taken off the rolls for arrears, leaving the present membership 18,402. At the coming meeting the Association will consider the report of the committee on re-orgaization. The report, a preliminary outline of which was published some time ago, will recommend some most radical changes. These, if adopted, will add greatly to the expenses of the Association, and will necessarily increase the annual dues of the members. For this reason there will probably be so much opposition developed that the report will not be adopted. The profits made by the *Journal* during the past year are nearly $20,000, but even this, we understand, would not meet the added expense of the new plan as recommended by the committee.

DOGS IN WAR.

According to the New York *Evening Post*, the question of the use of dogs to carry water, etc., to the wounded in the war is now one of the problems before the British army medical authorities. The trouble seems to be how to secure enough dogs of approved qualities. The St. Bernard breed is naturally suggested, but the size and expense and relative rarity of these dogs are against them. Moreover, to be useful at the proper time a certain sort of dog courage is essential, and it is feared that many otherwise useful animals would prove gun-shy amid the racket on the battlefield. It is said that, in the German military service, dogs have

been trained to act discriminatingly to a certain extent, to recognize friendly uniforms and avoid others, and even to act as combatants as it were. This, if true, is a complication that might seriously interfere with the usefulness of the animals as succor-bearers, and might even be worthy of consideration by the Hague tribunal or some other equally competent authority. If the dogs of war are literally to be let loose it would be in every respect better that they be utilized exclusively according to the British proposition. There is a possibility in it of real usefulness that would be seriously affected if these animals were trained for other warlike purposes.

A STATUTORY INCONSISTENCY.

Connecticut has passed a law regulating the practice of osteopathy, which goes into effect August 1. It contains a provision that the Board of Registration "may refuse to grant a license to any person addicted to any vice to such a degree as to render him unfit to practice osteopathy." This raises an interesting question: What special form or degree of vice will unfit a person from practicing osteopathy? It remotely suggests the proposition that has, we believe, been made, namely, that a certain particularly immoral business should be licensed under certain restrictions, one of which was that the licensee should be a person of good moral character and reputation. This is, of course, from the point of view of an educated physician; but that it also seems somewhat incongruous even to the lay mind, the following comments from the Hartford *Post* are evidence. That paper says: "What is the standard of vice that unfits a person to practice this brand of healing? To how great an extent must a person be addicted to the vice of lying, or to the vice of drunkenness, or to the vice of immorality before he is unfit to cure according to the osteopathic code?" For ourselves, we give it up—the conundrum is too much for us. The provision of the bill is, as the *Post* says: a statutory inconsistency, a legislative Hibernicism, like the act as a whole an evidence of the benighted condition of the legislators.

SCHOOL FOR HEALTH OFFICERS.

A new departure in educational lines recently occurred in Burlington, Vt. This was the gathering together of those interested in sanitary science in that state into what is called a "School for Health Officers." This school was provided for in a law recently passed in that state and is held under the auspices of the State Board of Health. Every health officer in the state is expected to attend this school, he being paid per diem and mileage. Others interested in sanitary matters were invited to this first meeting, although only the health officers received any remuneration. Topics of interest to health officers were the main subjects considered, and these covered a variety of questions. From reports of this meeting, one is impressed with the fact that it has proved to be one of practical value, the papers and discussions being such as would help to give the health officers in attendance a thorough knowledge of the work they are supposed to look after and undertake. Health officers nowadays, if they are fit for the position they occupy, must have a broad comprehension of their duties and be thoroughly versed in all that pertains to the prevention of disease. They need something more than ordinary medical training. Perfect sanitation consists of good drainage, proper disposal of sewage, correct plumbing, perfect ventilation, wholesome water, pure milk, and much more that is outside of what the general practitioner is supposed to know. Until the time comes, if it ever should come, that men should be educated for this particular calling, it would seem that such a school as the one held in Vermont will soon become almost a necessity. Certainly, it is something that is worthy of imitation and it is hoped that other states will follow the excellent example.

BLUE URINE.

The urine may undergo various changes in color from concentration as in the presence of fever; from the ingestion of certain articles, as rhubarb, senna, santonin, carbolic acid, methylene-blue; from the existence of certain morbid processes, as jaundice, cholera, typhus fever, pernicious anemia, melanotic sarcoma; from the presence of blood, pus, etc. The urine has been observed to be blue in those taking methylene-blue, which has been employed in the treatment of malarial fever, gonorrhea, diabetes and other affections, and also from the formation of indigo in those in whom indican is present as a result of putrefactive processes taking place in the intestines. A unique instance of the latter variety is recorded by Mr. John Good,[1] occurring in an unmarried man, 43 years old, who had been drinking excessively, had vomited and complained of feeling sickly, with loss of appetite, pain in the loins over the kidneys and discolored urine. The conjunctivæ were yellowish and the bowels were "out of order." The urine on examination was found to be of a peacock-blue color and clear, with a specific gravity of 1010, and an acid reaction. It was free from albumin and sugar, but acquired a rose tint when boiled with dilute hydrochloric acid. On one occasion the urine passed had a sage-green color. Under treatment with calomel, salines and salicylates the peculiar hue of the urine disappeared. The patient was sure that he had taken nothing that could have brought about the strange condition of the urine, in explanation of which it is suggested that it was due to the formation of indigo through oxidation of the indican that results from the putrefactive activity of the bacillus coli upon the products of tryptic digestion.

ATROPIN IN ILEUS.

Cases of ileus are frequently reported in which relief was obtained by enemata of water or of air, by the external application of poultices, or by the administration of drugs. Among the latter atropin is credited with many cures. Attention is again called to this drug by Rumpel,[2] who, at the meeting of the Medical Society of Hamburg, reported two cases in which the subcutaneous injection of atropin had been promptly followed by relief of symptoms and by recovery. In the

1. Lancet, June 1, 1901, p. 1535.
2. Deut. Med. Wochenschrift, Vereins-Beilage, July 4, 1901.

first case, a woman of 64, there were severe abdominal pains, greatly distended abdomen, no visible peristalsis, no escape of feces or gas per rectum even with copious enemata, fecal vomiting, anuria and collapse. There was entire relief from atropin. The second case was somewhat similar, the results from atropin being equally prompt. The question arises, however, as to the nature of the obstruction: Was it mechanical or dynamic? The discharge of hard scybalous masses in the first instance leads Rumpel himself to suggest the probability of coprostasis and to feel that the good results came from the paralyzing action of the atropin on the nerve endings in the unstriped muscular fibers of the intestine, with consequent relaxation of spasm and alteration of meteoristic pressure. Yet he believes that benefit may be derived from atropin even in some cases of mechanical ileus and advocates a short trial of this drug before resorting to operation. Where there is probability that the obstruction is non-mechanical, atropin should be tried. But a long delay in mechanical ileus, when there is competent surgical aid at hand, is dangerous. As Kümmell said in the discussion of Rumpel's paper, atropin and opium are of service in relieving non-mechanical obstruction by relieving spasm; but the cases thus far published as cures of ileus by atropin seemed to him to prove that a genuine mechanical ileus is not influenced by atropin.

OVERSUPPLY OF MEDICAL GRADUATES.

There are probably between 115,000 and 125,000 medical practitioners in the United States, or one to about every 600 of the population. Every year about 1600 of them, more or less, may be expected to die. The loss by emigration is practically nothing. The territory is rapidly being filled up and some of the newer states have already a larger proportion of physicians than some of the older ones. In 1890 we were sixty-five millions, in 1900 we are seventy-five, an average net annual increase of 1,000,000, which at the ratio of one physician to 600 people (hardly a living ratio for the doctor) would make places for nearly 1700 additional physicians annually. This, therefore, with the 1600 or so vacancies by death would make room for nearly 3300 new doctors each year, provided the same annual increase in population continues, which is perhaps dubious. Our 160 medical colleges, however, turn out annually a crop of nearly 6000 graduates, or over 2000 more than can thus be provided for. These figures, it should be remembered, do not include a vast number of off-color practitioners, who nevertheless have their share of public patronage and thus serve to curtail the means of support of the recognized physicians, nor the accessions from outside the country by immigration. These facts are reviewed in a recent issue of the *Chicago Tribune* with comments such as would naturally be made upon such a showing. It is well for us to occasionally refresh our memory with these figures, bearing as they do on some questions of really vital interest to the profession. It is certain that the multiplication of doctor-factories has gone far enough in this country, though as yet it does not seem to have been checked. It is not a dignified comparison, that of the medical graduates to the output of a machine shop; but the same principles of political economy apply in a measure to both. Overproduction in either has its bad effects, and we have not the resource of a foreign market enjoyed by the ordinary manufacturers. The same evils of excess of doctors are complained of abroad, though infinitely less evident than here, and we will apparently soon have little prospect of a satisfactory future for the American medical graduate either here or elsewhere.

Medical News.

CONNECTICUT.

Dr. G. D. Higgins, West Hartford, has been appointed hospital steward and house physician of the state prison.

The State Board of Medical Examiners, at its recent session in New Haven, passed seven out of ten applicants for practice of medicine in the state.

Dr. Charles W. Page, Middletown, who has resigned the superintendency of the Connecticut Hospital for the insane, will leave the institution August 1, and will, it is believed, be succeeded by Dr. Henry S. Noble.

Tablets are to be used by the physicians for the poor of New Haven. The superintendent of the department of charities and corrections has decided to economize by not allowing the town physicians to give prescriptions. In lieu of this they are expected to carry medicine in tablet form, which they will dispense as required.

ILLINOIS.

Dr. A. J. Lennon has been appointed interne at St. Joseph's Hospital, Joliet.

Dr. Frederick A. McGrew, Davis, sails for Europe, July 7, on the *Graf Waldersee*.

Non-Medical Management of Hospital.—The affairs of Sherman Hospital, Elgin, are said to be much disturbed by the objection of the medical staff to the conduct of the hospital by the Elgin Woman's Club. The objecting physicians have pledged, thus far, $7000 toward a new hospital, to be under the charge of the Sisters of St. Joseph.

Per Capita Expense at State Institutions.—The quarterly bulletin of the State Board of Charities shows that net average expense per capita of the inmates in state institutions was $38.78, and the gross average cost, $43.91 for the quarter. The greatest expense was at the Hospital for the Criminal Insane, Chester, $54.05, and the minimum at the Illinois Southern Hospital for the Insane, Anna, $23.74.

Chicago.

Dr. Carl Wagner is sojourning for the summer at Bonn on the Rhine, Germany.

Dr. Ralph S. Porter, who first saw service as lieutenant and assistant surgeon, assigned to the Second Illinois Infantry, U. S. V., and who after his muster-out served acceptably in the Philippines, has been appointed major and surgeon of volunteers.

Volunteer Medical Service for Poor.—More than fifty physicians and nurses have volunteered for medical service in the crowded tenement districts during the summer months, in response to the appeal of Dr. John R. Neely, of the health department.

The hypnotist, who applied to the mayor for a permit to bury a young man alive while in a hypnotic state, has been summoned to appear before the State Board of Health on the charge of falsely representing himself to be a physician. His name does not appear on the list of registered physicians.

Mortality of Chicago and New York Compared.—During the week ended July 6, the death-rate in Greater New York was 40.82 per 1000, and in the Borough of Manhattan (old New York) it was 42.14. For the same week in Chicago the death-rate was 13.59 per 1000, or 66 per cent. less than that of Greater New York and more than 67 per cent. less than that of old New York. In the eastern city there were 989 deaths from sunstroke direct during the week; in Chicago there were but 12 deaths from sunstroke direct, while the general death-rate was increased only from 12.54 to 13.59 per 1000.

Low Mortality.—July promises to be unprecedented as regards low mortality. For the first twenty days of the month the total deaths from all causes numbered only 1273—an average of 63.6 per day, or a monthly aggregate of 1971, as against a monthly average of 2435 July deaths during the previous decade, 1891-1900. There were 27 fewer deaths last week than during the week previous, and 33 fewer than during the corresponding week of last year. One of the principal factors in this low July mortality rate is the fewer deaths among infants and young children, from the acute intestinal diseases, diphtheria, convulsions, meningitis, marasmus and other diseases of childhood influenced by hot weather. The deaths under five years of age last week were 149, as against 189 last year. A notable feature of last week's records is the great difference in the number of deaths of males and females; 254 deaths of males were reported and 173 females—an excess of nearly 50 per cent. of males. Greater exposure to the heat and irregular habits of life among the sterner sex are the probable causes of this disparity. This is borne out by the statistics of deaths from sunstroke; of the 28 deaths from this cause during the month all the adults were males.

IOWA.

A hospital has been established at Fort Madison by the Sisters of Mercy.

Dr. **David W. Smouse,** Des Moines, is attending the British Congress of Tuberculosis.

The **Iowa Sanatorium and Benevolent Association** has been incorporated at Des Moines, with Dr. John H. Kellogg as the medical representative of the incorporators.

Dr. **Hoffman**, pathologist of the State Hospital for the Insane, Mount Pleasant, has resigned to accept a salaried position on the faculty of Drake University, Des Moines.

Davenport has been fearing an epidemic of smallpox since the public funeral of a man who died from the disease. A private funeral was permitted, but without the sanction of the health authorities public services were held.

MARYLAND.

Maryland Pharmaceutical Association.—The annual meeting of this Association was held at Ocean City last week. H. P. Hynson, of the committee on adulteration, reported that he had found wood alcohol in the products of but one concern, although several had been examined. One lot of essence of ginger contained but 33 per cent. of ethyl alcohol when it should have contained at least 95 per cent. No wood alcohol was found in tincture of iron, but several specimens contained but 50 per cent. of grain alcohol; the pharmacopeia requiring 75 per cent. Of six lots of tincture of iodin, one sample contained but 5 per cent. of ethyl alcohol; two were made with wood alcohol, and all but three were greatly deficient in iodin. Seidlitz powders exhibited much adulteration.

Dr. **Parnell F. Sappington** gave a lawn fête at his country place, Wrenwood, near Govanstown, on the evening of July 19. He is president of the North-Eastern Dispensary of Baltimore, and the object was to raise funds to procure surgical instruments for that institution. The Dispensary was founded in 1853 and it is proposed shortly to pull it down and erect a larger and more modern building. A fresh supply of spring water, more than adequate for its needs, has recently been obtained. Dr. W. J. Todd read a history of the physicians who lived at Mt. Washington, Baltimore County, when it was known as Washingtonville, and the doctors' fees were twelve and one-half cents a month for each member of the family, sick or well, while babies were exempt from any tax until they were 30 days old. The earliest physicians were Dr. Septimus Dorsey and Mr. Hollingsworth. The hospital is beautifully situated at an elevation of 500 feet above sea-level.

Baltimore.

The **Baltimore County Medical Association** held its July meeting on the 18th, at Endowood Hospital for Consumptives, about 40 members being present. The society was the guest of the Hospital Board and a handsome luncheon was served. The large mansion and 75 acres of forest land surrounding were inspected. Since its opening in 1896, 154 cases have been treated, of whom 42 have been cured or improved. At present there are 20 inmates. A cottage is in course of erection. The treatment consists of concentrated diet of highly nutritious foods, regulated bathing, regular hours and few drugs. Creosote has given good results.

At **the University of Maryland,** Dr. José L. Hirsh has been made associate professor of pathology and bacteriology and visiting pathologist to the University Hospital; Dr. D. M. R. Culbreth, professor of materia medica and pharmacognosy; Dr. R. Tunstall Taylor, associate professor of orthopedic surgery; Dr. John G. Jay, associate professor of clinical surgery; Dr. H. H. Arthur, associate professor of diseases of women; Dr. S. B. Bond, associate professor of genito-urinary diseases; Dr. Harry Adler, associate professor of diseases of the stomach; Dr. Hughlett Hardcastle, lecturer on diseases of the nose and throat; Dr. Geo. A. Fleming, demonstrator of ophthalmology; Dr. E. V. Milholland, demonstrator of diseases of the throat and nose; Dr. H. C. Hyde, demonstrator of pathology and bacteriology.

Personals.—Dr. J. Edwin Hengst and Harry Boyd have gone to the Pan-American Exposition. Dr. J. Whitbridge Williams is at Watch Hill, Rhode Island. Dr. C. Urban Smith is at Atlantic City. Dr. S. B. Wrightson has gone to the Pan-American Exposition and Niagara Falls. Dr. J. H. Hartman left on the 23d for a trip to Rhode Island and Maine. Dr. John C. Hemmeter is at Cape May. Drs. J. Frank Crouch and J. J. Carroll sailed on the 11th inst. for Germany. Dr. Harry M. Thomas is at Blue Ridge Summit, Pa. Dr. Rosell Berryman, of this city, while on a visit to a friend in Washington, was seized with appendicitis; he was removed to the Emergency Hospital and operated on the 14th by Dr. Vaughn. Dr. Sidney Cone is in the mountains of western North Carolina. Dr. Wm. T. Howard is at Bedford Springs, Pa. Dr. Howard A. Kelly has closed his sanitarium for the summer and will make a canoe trip on the Susquehanna of 101 miles, accompanied by Drs. F. P. Bull, Justus Barth and others; later he will go to Northfield, Mass., to attend a bible conference; he will spend September at his camp in Canada.

MASSACHUSETTS.

A medical house is being built in connection with the Epworth League Settlement in the North End, Boston.

Dr. C. J. Leary, Waltham, has entered on his term as assistant surgeon at St. Vincent's Hospital, Worcester.

Dr. John F. McHugh has been made resident physician of Lowell General Hospital, vice Dr. F. Herbert Coffin, term expired.

The Isolation Hospital at North Brookfield, which was ready to receive patients, was burned July 3. The loss was $1200 without any insurance.

MICHIGAN.

Smallpox has appeared at the Michigan Asylum for the Insane, Kalamazoo. On July 19 there were twenty-nine cases of the disease among the attendants and patients.

Grand Rapids Medical College.—The litigation over the ownership of the stock of this college was temporarily concluded July 15 by Judge Wolcott, who held that the contract contemplated that the stock should be paid in money and that each of the fourteen physicians is entitled to but ten shares and that they can secure control of the remaining thirty, which they bargained for, by paying in $75 within thirty days. The college is to bear the expense of the litigation.

Health of Michigan.—For June, 1901, compared with the average for that month for the last ten years, pneumonia, scarlet fever and smallpox were more than usually prevalent; and consumption, inflammation of kidney, intermitten fever, measles, erysipelas, inflammation of bowels, remittent fever, cholera morbus, dysentery and cholera infantum were less than usually prevalent. Cerebrospinal meningitis was reported during June, at 6 places; whooping cough at 30 places; diphtheria at 48 places; typhoid fever at 52 places; scarlet fever at 117 places; smallpox at 118 places, and consumption at 216 places. Reports from all sources show cerebrospinal meningitis reported at 4 places less; whooping cough at 5 places less; diphtheria at 13 places less; typhoid fever at 18 places less; measles 4 places less; scarlet fever at 40 places less; smallpox at 35 places less; and consumption at 15 places less, in June than in May, 1901.

MINNESOTA.

Dr. Charles L. Greene, St. Paul, is attending the British Congress of Tuberculosis.

Dr. Henry S. Nelson has succeeded Dr. William J. Byrnes as city physician of Minneapolis.

Dr. William E. Todd, Albert Lea, has been appointed physician of Freeborn county at a salary of $600 a year.

Dr. William F. Milligan, Wabasha, sailed for Southampton July 17, on the *St. Louis*. He expects to spend three months abroad.

Dr. Charles F. Warner, Mankato, accused of failing to report a case of contagious disease to the local health officer, has been acquitted.

Dr. Oscar C. Heyerdale, Rochester, has returned from a trip to Norway and Sweden, where he took two insane patients ordered to be deported to their native towns.

Smallpox.—The report of the State Board of Health for the fortnight ended July 1 shows 527 new cases of smallpox, 63 less than in the preceding two weeks. Of these Duluth has 53 new cases, St. Cloud, 29, and Grand Marais, 26.

A fresh air hospital is to be established on Harriet Island, St. Paul, equipped with all essentials for the care of sick children. The hospital is to be under the immediate control of the health commissioner, Dr. Justus Ohage, and will be open until the end of September.

MISSOURI.

Dr. English J. Warth has been appointed assistant physician at State Lunatic Asylum, No. 3, Nevada, vice Dr. Rufus Gillaspy, deceased.

Dr. Edwin E. Hunter, St. Joseph, formerly city physician, is now surgeon of the *Montreal*, a steamer plying between New Orleans and Cape Colony, South Africa.

Dr. M. Hayward Post, St. Louis, has been appointed by the governor a member of the Board of Managers of the Missouri School for the Blind, vice Dr. J. Harvey Moore, resigned.

NEBRASKA.

Dr. Charles C. Allison, Omaha, left last week for Europe, and will return in September.

Nebraska Physicians.—Labor Commissioner Watson has completed a compilation of statistics regarding Nebraska physicians. On July 2 there were 955 regulars practicing in the state, 119 homeopaths and 100 eclectics. Classed among physicians in these statistics were 17 osteopaths.

Dr. Mabel Dunn, Syracuse, a graduate of the Northwestern University Woman's Medical School in 1876, has been appointed assistant physician to the Hospital for the Insane, Lincoln. She succeeds Dr. Minerva Newbecker. Dr. Dunn was formerly connected with the Illinois Eastern Hospital for the Insane, Kankakee.

NEW JERSEY.

Dr. James W. Smith has resigned as assistant health officer of Paterson and physician-in-charge of the Isolation Hospital. Dr. Frank E. Agnew succeeds him in the latter position at a salary of $1,000 per annum.

Testimonial to Dr. Wienges.—The Medical Board of Christ Hospital, Jersey City, has passed resolutions in which it records with sincere sorrow the death of Conrad Wienges, M. D., in whose death it mourns a citizen of high character, one long and honorably identified with the hospital, in the records of which he will always live as a faithful, intelligent and esteemed member of his profession, and it tenders heartfelt sympathy to his bereaved family, and trusts that the memory of his good work may soften their great sorrow.

Mercer Hospital, Trenton.—The board of managers of the hospital has appointed the following staff: Consulting surgeons, Drs. Samuel W. Latta and Thomas H. Mackenzie; consulting physicians, Drs. William Elmer and Cornelius Shepherd; gynecologist, Dr. Joseph B. Shaw; pathologist, Dr. Irenaeus M. Shepherd; attending surgeons, Drs. John Bruyere, Nelson B. Oliphant, John S. Jamison and William McD. Struble; attending physicians, Drs. Irenaeus M. Shepherd, William A. Clark, Charles J. Craythorne and Charles F. Adams; medical director, Dr. William Elmer; resident physician, Dr. Frank Harris, and registrar, Dr. George H. Parker.

NORTH DAKOTA.

The State Medical Board, at its meeting in Fargo, July 11, admitted seven out of nine applicants for license to practice medicine in the state.

Dr. Frederick J Duggan, Grand Forks, has been appointed superintendent of the Grand Forks County Board of Health, vice Dr. Samuel H. Irwin, term expired.

OHIO.

Dr. Thomas C. Hoover, Columbus, on the completion of his twenty-fifth year of service with St. Francis' Hospital, was presented with a handsome silver tea and coffee set and salver by the Sisters of the Poor.

Protestant Hospital, Columbus, at the annual meeting of its trustees, July 9, elected Dr. David N. Kinsman, chief of staff, and the following as members of the medical and surgical staff: Drs. Will J. Means, Sherman Leach, John H. J. Upham, Clovis M. Taylor, Yeatman Wardlow, William L. Dick, Thomas G. Youmans, John W. Wright, Andrew Timberman, Harvey C. Fraker, Carl L. Spohr, George M. Waters, Edwin F. Wilson, James N. Barnhill, John E. Brown, Charles S. Means, Charles A. Cooperrider and Eugene G. Carpenter.

TENNESSEE.

Dr. Louis Leroy, Nashville, State Bacteriologist, has gone to Washington, where he will study the methods pursued by the Marine-Hospital Service in the Government laboratory, with a view to their application in Tennessee.

Tribute to the Memory of Dr. William L. Nichol.—The physicians of Nashville, at a meeting recently held, prepared and passed resolutions expressing their sorrow at the death of Dr. William L. Nichol, and their appreciation of the great good he had accomplished as a physician, a humanitarian and a citizen.

Medical Department of the University of the South.—The progress of this school has been such in the past two years that it has been found necessary to add a new wing to the main building. The amphitheater has also been enlarged to accommodate 250 students. A new chemical laboratory and lecture room have been added and a new pharmaceutical laboratory fitted up. The equipment of the pathologic and bacteriologic laboratories is being improved.

TEXAS.

Drs. E. D. Capps, Fort Worth, and R. F. Miller, Sherman, have gone to New York and will sail for Europe for the purpose of studying in the hospitals for several months.

Dr. J. E. Gardiner has been elected professor of anatomy, and Dr. Roy W. Dunlap, demonstrator of anatomy in the medical department of the Fort Worth University.

New Medical Law for Texas.—The new medical law passed by the last legislature went into effect on July 9 and Governor Sayers appointed the three boards as required. While the new law is not all that was desired, it is a great improvement over the old method under which the diploma and certificate mills flourished.

The Board of Medical Examiners for the State of Texas has been appointed by the governor. The representatives of the regular school are Drs. Joseph W. Scott, Houston; John H. Evans, Palestine; Don. J. Jenkins, Daingerfield; J. T. Wilson, Sherman; Matthew M. Smith, Austin; John C. Jones, Gonzales; Joseph H. Reuss, Cuero; Frank Paschal, San Antonio and Sam R. Burroughs, Buffalo. The board met for organization July 23 at Austin.

UTAH.

Dr. W. A. Wright has been appointed interne at St. Mark's Hospital, Salt Lake City.

Dr. Theodore B. Beatty, Salt Lake City, started July 3 for a two-months' trip to Japan.

Eight New Physicians.—As a result of the examination for license to practice, which was concluded July 3, eight applicants were granted permission to practice in the state.

The State Board of Medical Examiners has been reorganized by the election of Dr. Elias S. Wright, Salt Lake City, president, and Dr. Robert W. Fisher, Salt Lake City, secretary.

VERMONT.

Dr. H. Edwin Lewis, Burlington, is in attendance on the British Congress of Tuberculosis in London.

Dr. Fred K. Jackson, Barre, has been appointed instructor in physiology in the medical department of the State University.

The University of Vermont Medical Department, Burlington, held its annual commencement exercises, June 27, graduating a class of 23. The doctorate address was delivered by Dr. John Ordonoux, emeritus professor of medical jurisprudence.

Dr. Ashbel P. Grinnell, a practitioner of Burlington, who was arrested in New York in March last, on the complaint of Edward Weston, of the Weston Electrical Instrument Company, has entered suit for $50,000 damages in the United States Court against Mr. Weston, who admitted that the case was one of mistaken identity.

WISCONSIN.

The State Medical Board has ordered the arrest of a magnetic healer of Ripon, on the charge of unlawful practice of medicine.

Dr. Hiram **P. Melville,** Milwaukee, has been elected surgeon of the Wisconsin Veterans' Home, Waupaca, vice Dr. George B. Noyes, deceased.

Drs. **Edwin J. and John F. Farr,** Eau Claire, have been appointed by the surgeon-general, examining surgeons of recruits for the National Guard of the State.

GENERAL.

Plague in **New York.**—A case of bubonic plague has been discovered on the steamer *Hohenfels* in New York.

Governor-**General Wood Convalescent.**—Governor-General Wood has almost recovered from a severe attack of typhoid fever. He purposes starting for a short Atlantic cruise on the 29th.

Yellow **Fever in Cuba.**—Latest reports indicate that yellow fever is developing in certain parts of Cuba. Surgeon Glennan, of the Marine-Hospital Service, reports that there are two cases of yellow fever at Cienfuegos and one suspicious case at Santiago. It is also reported that there are five cases at Santiago de Las Vegas, a town of 6000, 23 miles from Havana. Spaniards are the sufferers in each instance. The cases at the latter city are not verified at this time.

CANADA.

Dr. **A. A. Biron,** Manchester, N. H., is spending a holiday in Montreal.

Dr. **E. B. Prettyman,** Baltimore, is at the Place Viger, Montreal.

Dr. **Hunter Robb,** Cleveland, Ohio, is spending a four weeks' holiday at Murray Bay, Quebec.

The **Western Hospital, Montreal,** has elected Drs. W. E. Deeks, W. G. Reilly and R. H. Craig to positions on the medical staff.

Winnipeg General Hospital, during the week ending July 13, treated 192 patients, 106 men, 63 women and 23 children; 36 out-patients were also treated.

A new **isolation hospital** for smallpox patients is about completed in Toronto and the work of removal of patients commenced. There are now about six cases of smallpox in that city.

The **city water of Toronto** was never in a purer condition than at present. The city bacteriologist states that in the spring there are as many as 20,000 colonies of bacteria in each cubic centimeter of water, but at the present time there are only 150.

Toronto **sewage disposal** has again become a live question. The city engineer has recommended that a trunk sewer be constructed and the sewage carried into Lake Ontario at least three miles distant from the Eastern city limits. The whole scheme of sewage disposal is to cost $1,750,000.

The **Sick Children's Hospital, Toronto,** has appointed the following resident staff for the coming year: Drs. Allen B. Rutherford, John D. Chisholm, W. B. Lowry and Margaret McCallum, the latter being one of the first women to be appointed on any hospital staff in Canada.

A **dangerous cattle affection,** splenic disease, has broken out in Stormount County, some forty miles from the city of Ottawa. A large number of cattle have been lost within the last couple of weeks. The disease is spreading to horses. Healthy animals take sick and die within twenty-four hours.

The **Montreal Health Department** had a busy month in June. During the month there were 165 new cases of infectious diseases, of which 44 were made known only at the time of death. Typhoid fever was the most prevalent, with 80 cases, of which 14 proved fatal. Measles came next in order, with 13 deaths in 40 cases reported; scarlatina with 8 deaths in 39 cases, and diphtheria, 5 deaths among 18 cases.

The **Medical Society of New Brunswick** held its twenty-first annual meeting at Moncton on the 16th and 17th of July, with Dr. S. C. Murray, the vice-president, in the chair. Among others who contributed papers were Drs. J. H. Ryan, of Sussex, A. J. McCully, of Moncton, G. A. B. Addy, of St. John, J. C. Webster of Chicago, J. R. MacIntosh and W. L. Ellis of St. John. The following officers were elected: president, Dr. S. C. Murray, Albert; vice-president, Dr. G. A. B. Addy, St. John; corresponding secretary, Dr. J. O. Calkins, Sackville; recording secretary, Dr. W. L. Ellis, St. John. St. John was selected as the next place of meeting.

The **Medical Association** of the District of St. Francis was held in Sherbrooke, recently. Dr. Brown, Richmond, Quebec, presided and there was a good attendance of members. Dr. Russell Thomas, Lennoxville, was appointed to represent the Association at the coming meeting of the Canadian Medical Association in Winnipeg; and the delegate was authorized to bring before the Association the scheme of the medical defense union which was started by the St. Francis Association, and to offer to the Canadian Association the scheme which is already in working order, so that it may be put into operation at once instead of having to wait several years as they would have to do if the matter was left to a committee scattered all over the Dominion. A resolution favoring Dr. Roddick's Registration Bill was passed unanimously by the Association.

Canadian Medical Association.—The coming meeting of the Association at Winnipeg, the last four days in August, promises to be one of the most successful yet held. Many Eastern practitioners have already signified to the secretary their intention to be present and letters of inquiry are coming in daily. The profession in the prairie city are laying themselves out to entertain their confrères from the East right royally. Amongst other functions there is going to be an excursion to Old Fort Garry and a specially arranged excursion through the great wheat belt of Manitoba. After the meeting many of the members will take advantage of the cheap rates offered by the Canadian Pacific Railway to Banff and the Pacific Coast. Among others who are to take part in this meeting will be Dr. J. R. Jones, of Winnipeg, who is to deliver the address in medicine; Dr. O. M. Jones, Victoria, B.C., who will deliver the address in surgery, and Dr. Thomas S. Cullen, of Baltimore, who will deliver the address in gynecology. Visiting members may well look forward to a rich treat both socially and scientifically in Winnipeg.

FOREIGN.

Italian Congress of Pediatrics.—The fourth congress of pediatrics will convene at Florence, October 15 to 20.

The Medico-Psychological Association of great Britain and Ireland will be held in Cork, Ireland, on July 25 and 26.

Bubonic Plague at Marseilles.—The French steamer *Laos* arrived at Marseilles from Yokohama, July 7, with several cases of plague on board. Two of the crew, Arab stokers, have died, the last on July 20. The others are progressing favorably.

Virchow's Eightieth Birthday.—Professor Virchow's eightieth birthday will be celebrated in Berlin October 12, and it is expected that representatives from the scientific bodies of various countries will attend and present congratulatory addresses to the learned scientist.

Suspected Plague on British Steamer.—The steamer *Ormuz*, from Sydney to London, landed two cases, believed to be bubonic plague, at Plymouth, on July 22. One case developed after leaving Marseilles. During the passage, it was refused admittance to the harbor of Gibraltar.

The seventieth birthday of Professor His, of Munich, was celebrated July 9. The *Muenchener Med. Woch.* reviews his scientific achievements, and more than 100 publications. His great work on the anatomy of the human embryo and his studies on the nerve cells opened the way for the discoveries of Golgi, Ramon y Cajal, and others, besides his own important contributions on the subject of the nervous system. The uniform nomenclature of anatomy is to a certain extent his work.

French Appropriation for the Study of Yellow Fever.—The French government has appropriated 100,000 francs to defray the expenses of a scientific mission for the study of yellow fever in America. The *Semaine Médicale* states that the party will go to Rio Janeiro, as yellow fever is more frequent there than in Havana and the Gulf of Mexico, and better facilities are afforded for research. It is expected that the further expenses of the mission will be borne by the French Senegal colony, in West Africa, which is directly interested in the study of yellow fever.

Congress of Czech Physicians and Naturalists.—Slavic physicians and scientists gathered at Prague in May to the number of a thousand to hold the third Czech congress, the last having taken place nineteen years ago. The congress was divided into eleven sections, and more than 360 communications were presented. The Czechs have a university at Prague, whose scientific importance is thoroughly appreciated abroad. The number of students is so large that it is proposed to found a second university and medical department at Maehren. Hlava presided over the congress. The title of one of the chief addresses was the "Influence of Civilization on the Nervous System," by Thomayer; he does not consider this influence deleterious. Knighthood of the Order of Leopold was conferred by the emperor on Professors Pribram, Eiselt and Jirus, and other decorations on Janovsky, P. J. Pick, F. Friedreich and J. Rychna, on this occasion.

Miscellany.

Production of Biliary Calculi.—Italia concludes that the proliferation of attenuated non-virulent, micro-organisms in the gall-bladder causes the bile to become more acid. This in turn induces the precipitation of granules which agglomerate to form calculi, agglutinated by the mucus secreted by the walls of the gall-bladder.—*Policlinico*, viii, 4.

The Anopheles as Host of a Trematode.—The Rome correspondent of *The Lancet* states that Marbirano, while examining the stomach and salivary glands of hybernating mosquitoes, found that a large number of these insects acted as hosts of a small trematode worm of the distomida family. These were encysted, and also found free in the thorax and abdomen. "Each cyst contained only one distoma of a flat leaf-like form, oval, somewhat elongated, becoming during its active progressive movements after its liberation from the cyst narrow and ribbon-like in shape." Several of the anopheles were also infected with filaria, which were found in the Malpighian tubes.

The State Reformatories in England, according to their rules just published, have three grades, the Licensed Retreats in which inebriates seek voluntary retirement, the certified Inebriate Reformatories, to which commitments may be had and the State Inebriate Reformatories for persons led by drink into crime. Where an inmate has any property available for his maintenance an order may be obtained from a county court judge for that purpose. The inmates are, too, separated into three classes each with a distinctive badge. A system of rewards and punishments promotes or degrades from one class to another. Members of the special class may become eligible for positions of trust in the reformatory or they may be lowered to the penal class. According to the multiple regulations the reformatory element is to be in the ascendant and in no case is a discharge on "leave" impossible. Still the combination of prison discipline with remedial treatment may not be altogether acceptable to the subjects, who as a whole never seem to forget their grievances.

Uniform Medical Legislation.—The preliminary report of the Committee on Organization of the American Medical Association (see THE JOURNAL of the American Medical Association, May 25, 1901), while speaking of the reorganization, mentions prominently medical education and medical legislation and reciprocity. We sincerely hope, not only that these two most important questions will receive due consideration on the part of the House of Delegates, and of the General Meeting, at Saratoga, but also that material progress will be made by advocating and endorsing such steps as may be recognized as commendable. It appears to us that a high standard of preliminary education, and a thorough medical course in a well equipped and continually inspected medical college, should be insisted upon. The example set by the New England Medical Boards, which formed a working group, should be recommended. These and similar considerations suggest themselves to the American Medical Association. Although a sub-committee on uniform medical legislation was appointed by the Conference of the Committees on National Legislation of the American Medical Association and affiliated societies, the responsibility, we think, rests upon the House of Delegates, and upon the General Meeting. Circumstances place the reorganized Association face to face with great problems. We feel assured that the American Medical Association will be equal to the task. —*Philadelphia Med. Journal*, July 13.

Staining the Tubercle Bacillus.—For the rapid detection of the bacillus tuberculosis in sputum and urine Dr. H. W. G. MacLeod has found the following method satisfactory with the Ziehl-Neelsen carbol-fuchsin stain. He employs extra thin slips of white crown glass, 76 mm. by 25 mm., and circular cover glasses (16 mm. = ⅝ "). On a slip cleared of all grease by means of ether and rectified spirit, three separate films are spread in the usual way, and fixed by passing the slide rapidly over the flame of a spirit lamp. By means of a small pipette filled with the stain, two or three drops of carbol-fuchsin are placed on each film. The slip is then held about 10 inches above the flame and gently moved about, the fluid being allowed to "steam" for five minutes without boiling. Fresh stain is dropped on with the pipette to prevent the films drying. The slide is then washed and decolorized in the usual way by dipping it into 25 per cent. of nitric or sulphuric acid, etc. A spot of Loeffler's methylene-blue is placed on each film, the slide is gently warmed for a few seconds, and then washed. The bacilli are usually stained perfectly. By this method, 1, three specimens can be prepared at once; 2, by applying the film to the slide and not to the cover glass all chances of breaking or dropping the latter and of losing the specimen are avoided. The circular cover glass is more easily manipulated and is less fragile than the square, and it encloses the largest space in the smallest boundary. By holding the slide in the fingers when "steaming," and not with Cornet's or other forceps, overheating is prevented. This also does away with heating the film in a capsule over a sand bath, which takes a much longer time; and if in this process a cover glass is used it is stained on both sides, and matters are complicated. Forceps holding a slide or cover glass get smeared at their points with carbol-fuchsin, and may re-stain the film after it has been decolorized by the acid. By the other method this is avoided. For saving time in clinical work and at examinations it is rapid and effective.—*British Medical Journal*, June 6.

French Congress of Otology and Laryngology.—The principal addresses at this congress which convened at Lille, May 1, were on "Sphenoidal Sinusitis" and "Nasal Hydrorrhea." The great benefit of hot air in the treatment of affections of the mucosa of the upper air passages was corroborated by Lermoyez, who related among others the case of a man who had suffered for thirty years from nasal hydrorrhea with sycosis of the upper lip, rebellious to all measures. Under treatment with hot air, a surprising improvement became evident in a few seances. Affections on a nervous foundation seem to be most susceptible to the benefits of this treatment, which probably acts by stimulating the natural forces, similarly to electricity and light in therapeutics. Sarremone described a case of facial neuralgia consecutive to nasal catarrh and subsiding as the latter was cured. Collinet reported two cases of primary chancre in the nasal fossæ. One patient, a merchant, had a habit of scratching the inside of his nose with a pencil that lay on his counter and was used by his customers, who probably wet it in their mouths. The symptoms were obstruction of the right nasal fossa with a mucopurulent discharge and a characteristic and painful adenopathy in the corresponding submaxillary region. The lesion was diagnosed by the appearance of secondary manifestations. Castex has been investigating 323 deaf mutes and concludes that this condition is the result of defective evolution or of pathologic alterations in the receiving auditory apparatus. A preceding meningitis was noted in 40, convulsions in 37, brain fever in 20, typhoid fever in 17, scrofula in 16 and traumatism in 9. Concomitant affections are frequent, especially ocular alterations; the dentition is often defective, the skeleton unsymmetrical, the skull oval and slanting. Congenital deaf and dumbness was to the acquired in the proportion of 145 to 178, and consanguinity in the parents was noted in 8.94 per cent. Tuberculosis, syphilis, lead poisoning and alcoholism in the parents are important factors. Brothers and sisters were affected in 45 out of the 323 cases. Emotions during pregnancy and abnormal deliveries also figure in the etiology. The autopsies show the predominant importance of lesions of the labyrinth, brain, and cerebellum, congenital rather than acquired. Goris described three cases of cancer in which after extirpation or resection of the larynx, he found it necessary to reopen the wound and excise a portion of the esophagus and surrounding muscles to prevent suffocation. The next congress will discuss the treatment of "Acute Suppurative Otitis" and of "Fibrous Stenoses of the Larynx."

An Encouraging Outlook.

The Nebraska State Medical Society and the Nebraska State Homeopathic Medical Society met in annual session this year at the same time and in the same city. From the minutes of the

Nebraska State Medical Society's transactions, as published in the *Western Medical Review*, we copy the following:

"Lindell Hotel, Lincoln, Neb., May 7, 1901.

"To the Nebraska State Medical Society: The Nebraska State Homeopathic Medical Society, in convention assembled, hereby send greeting to your honorable and scientific body. We wish you success in all your noble efforts and investigations. Our aims are mutual in the research of truth, and in the noble and benign effort to ameliorate and relieve the ills of suffering humanity. Respectfully, W. H. Hanchett, M.D., W. A. Cate, M.D., A. V. Holmes, M.D., Committee."

It was moved and seconded that the secretary acknowledge the communication from the Homeopathic Society in a courteous and ceremonious manner. Carried.

"Walsh Hall, Lincoln, Neb., May 8, 1901.

"To the Nebraska State Homeopathic Medical Society: The Nebraska State Medical Society, in convention assembled, acknowledge with thanks the very cordial greeting from your honorable and scientific body and express its best wishes for you. May the unfolding of the great science of medicine lead all honorable physicians nearer together and stimulate the growth of a more fraternal feeling. A. D. Wilkinson, Secretary."

An Eddyite Prayer Against Dyspepsia.

The following sample of "christian science" is quoted by Samuel Lloyd Luckey in the *Journal of Physical Therapeutics* from one of the Eddyite publications, "Faith Healing and Christian Science," by Miss Alice Fielding, p. 214. It is a prayer for a dyspeptic, drawn up by Mr. Hazzard, president of the New York School of Primitive and Practical Christian Sciences. The capitals and italics of the original are followed:

"HOLY Reality! We BELIEVE in Thee that Thou art EVERYWHERE present. We *really* believe it. Blessed Reality, we do not pretend to believe, think we believe, believe that we believe. WE BELIEVE. Believing that Thou art everywhere present, we believe that Thou art in this patient's stomach, in every fiber, in every cell, in every atom, that Thou art the sole, only Reality of that stomach. Heavenly, Holy Reality, we *will* try not to be such hypocrites and infidels as every day of our lives to affirm our faith in Thee and then immediately begin to tell how sick we are, forgetting that Thou art everything and that Thou art not sick, and therefore that nothing in this universe was ever sick, is now sick, or can be sick. Forgive us our sins in that we have this day talked about our backaches, that we have told our neighbors that our food hurts us, that we mentioned to a visitor that there was a lump in our stomach, that we have wasted our valuable time, which should have been spent in Thy service, in worrying for fear that our stomach would grow worse, in that we have disobeyed Thy blessed law in thinking that some kind of medicine would help us. We know, Father and Mother of us all, that there is no such thing as a really diseased stomach; that the disease is the Carnal Mortal Mind given over to the World, the Flesh, and the Devil; that the mortal mind is a twist, a distortion, a false attitude, the HARMATIA of Thought. Shining and Glorious Verity, we recognize the great and splendid FACT that the moment we really believe the Truth, Disease ceases to trouble us; that the Truth is that there is no Disease in either *real* Body or Mind; that in the Mind what *seems* to be a *disease* is a False Belief, a Parasite, a hateful Excrescence, and that what happens in the Body is the shadow of the LIE in the Soul. Lord, help us to believe that ALL Evil is Utterly Unreal; that it is silly to be sick, absurd to be ailing, wicked to be wailing, atheism and denial of God to say, 'I am sick.' Help us to stoutly affirm with our hand in Your hand, with our eyes fixed on Thee, that we have no Dyspepsia, that we never had Dyspepsia, that we will never have Dyspepsia, that there is no such thing, that there never was any such thing, and that there never will be any such thing. Amen."

Married.

FRANK L. ROSE, M.D., Chicago, to Miss Jessie Allen, Charlotte, Mich., June 25.

ELMER AYRES IRWIN, M.D., to Miss Emma Louise Jenks, both of Chicago, July 10.

E. C. ANDERSON, M.D., to Miss Belle Coulter Moore, both of Hopkinsville, Ky., July 15.

GRIFFIN W. HOLLAND, M.D., to Miss Grace Addison Wilkins, both of Eastville, Va., July 10.

HENRY C. HOLTZENDORFF, M.D., Mishawaka, Ind., to Miss Grace McDonnell, Titusville, Pa., July 9.

GEORGE J. LOCHBOELER, M.D., Washington, D.C., to Miss Mary Margaret Schmitt, Baltimore, June 26.

SCOTT PARKER CHILD, M.D., Kansas City, to Miss Mary Townsend Hotchkiss, Buffalo, at Lewiston, N. Y., July 10.

Deaths and Obituaries.

Harvey W. Harkness, M.D., Berkshire Medical College of Massachusetts (now extinct), 1847, died at his home in San Francisco, July 10, at the age of 80. He went to California soon after his graduation, and, after practicing his profession for twenty years, retired from active practice and devoted his attention to scientific studies. He was president of the California Academy of Sciences for nine successive terms, 1887-1896, and at the time of his death was a Regent of the University of California. As a scientist, Dr. Harkness devoted his investigations chiefly to the study of the fungi of the Pacific coast and upon that subject became an authority. His collection of cryptogams, containing 10,000 specimens and one of the finest known, was presented by him several years ago to the Academy of Sciences.

Edwin S. Lemoine, M.D., University of Pennsylvania, 1848, died of Bright's disease, July 17, at his home in St. Louis, Mo., aged 74. He was secretary of the AMERICAN MEDICAL ASSOCIATION, 1853-55. He was a member of the St. Louis International Medical Society, the Medical Association of Missouri, the St. Louis Academy of Science, and the Missouri Historical Society. He was elected president of the Missouri Obstetrical and Gynecological Society in 1892 and again in 1893. He was on the consulting staff of the Martha Parson's Hospital for Children and was first physician to the Memorial Home at St. Louis. He graduated from Princeton University in 1845, and at the time of his death was vice-president of the Princeton Club, St. Louis.

Milton T. Carey, M.D., Medical College of Ohio, Cincinnati, 1851, died at his home in Cincinnati, July 15, after a brief illness, aged 70. He was resident physician at the old Commercial Hospital and Lunatic Asylum, and was later attending physician to the Contagious Hospital. At the beginning of the civil war he was commissioned surgeon-major of the 48th Ohio Volunteer Infantry and served throughout the entire war, and was captured at the battle of Shiloh; toward the close of the war he was placed in charge of Woodward-Post Hospital, Cincinnati.

Freeman H. Chase, M.D., Medical School of Maine, Brunswick, 1866, died from apoplexy at his home in Bangor, Me., July 11, aged 62. He enlisted, when 21, in the 12th Maine Volunteers and served for three and one half years, rising to the rank of lieutenant, and was mustered out because of impaired health, due to his imprisonment in Libby and Andersonville prisons. He was also a graduate of Bowdoin College.

William H. Gobrecht, M.D., University of Pennsylvania, 1849, died in Washington, D.C., July 19, aged 72. During the civil war he was surgeon of the 49th Pennsylvania Infantry and served on General Hancock's staff. He had been demonstrator of anatomy in the Universities of Pennsylvania and Ohio.

Sanford S. Riddell, M.D., Tulane University, New Orleans, 1860, who had come from his home, Chippewa Falls, Wis., to attend the meeting of the Inter-County Medical Society, held at West Superior, dropped dead on the street at the latter place, as the result of a cerebral hemorrhage. He was 65 years of age.

Ellis P. Hamer, M.D., Jefferson Medical College, Philadelphia, 1851, died at his home in Lincoln, Neb., July 18, aged 78, after an extended illness. Since 1877 Lincoln has been his home; before that time he practiced in Fulton County, Illinois. He retired from active practice a number of years ago.

R. N. Cooley, M.D., Castleton Medical College, Castleton, Vt., (now extinct), 1859, died at his home in **Hannibal, Neb.**, July 17, aged 70. He resided many years ago in Oswego County, N. Y., and at an early date identified himself with the New York State Medical Association.

Newton Calhoun, M.D., for fifty years a practicing physician at Warsaw, Ohio, committed suicide by taking morphin, July 13. He was 83 years of age, and had been despondent since the recent death of his wife.

Edward Hewes, M.D., physician and lawyer, died at his home in Frederick, Md., July 15, aged 44, of pulmonary tuberculosis. He was a descendant of Joseph Hewes, a signer of the Declaration of Independence.

James A. Harris, M.D., Jefferson Medical College, Philadelphia, 1884, died at Asheville, N.C., where he had gone in the hopes of being better able to combat the pulmonary tuberculosis with which he was affected.

Moses F. Bassett, M.D., died at his home in Quincy, Ill., July 11, aged 81. He practiced first in Barnstable, Mass.; he came to Quincy in 1853, and until a few years ago continued to practice there.

Leonard W. Groce, M.D., Texas Medical College, Galveston, 1868, was struck by a switch engine and killed, July 6, while crossing the track at Hempstead, Tex., where he lived.

Thomas J. Cheatham, M.D., Medical College of Virginia, Richmond, 1850, died at his home near Chesterfield Courthouse, Va., July 13, of cancer of the stomach, aged 74.

Morris Fussell, M.D., who has practiced medicine in Chester County, Pa., for over fifty years, died at his home near Chester Springs, after a long illness, aged 72.

Stephen S. Wason, M.D., who has lived and practiced medicine in Wisconsin for over fifty years, died at his home in Black River Falls, July 13, aged 73.

John L. Gilbert, M.D., Keokuk Medical College, Keokuk, Ia., 1892, died suddenly while on a visit to his parents at Grantville, Kansas, July 13.

Joseph A. Chandler, M.D., who was a veteran of the 152d Indiana Infantry, died from the heat at his home in Warsaw, Ind., July 18, aged 73.

Samuel W. McEwan, M.D., Rush Medical College, Chicago, 1881, died at his home in Alexandria, Minn., after an illness of two weeks, aged 50.

John D. Weaver, M.D., Jefferson Medical College, Philadelphia, 1883, died of heart failure at his home in Norristown, Pa., July 12, aged 44.

Stephen Vankirk, M.D., Jefferson Medical College, Philadelphia, 1901, died at Grafton, W. Va., July 14, from Bright's disease, aged 27.

Francisco Ezell, M.D., Washington University, St. Louis, Mo., 1881, died at his home in Fayette, Mo., July 10, aged 54.

William M. Vaughn, M.D., Cherokee, Texas, was burned to death in his bed by the explosion of a lamp, July 10.

John F. Trenchard, M.D., Jefferson Medical College, Philadelphia, 1847, died at Fairton, N. J., July 12, aged 81.

Nelson L. Griswold, M.D., died July 8, at his home in Utica, N. Y., after a long illness, aged 79.

George H. McMurray, M.D., Albany Medical College, 1887, died from diabetes, July 12, aged 36.

Societies.

Buffalo Academy of Medicine, Section on Pathology.—At a recent meeting of this Section Dr. George W. Wende was elected chairman, and Dr. Irving P. Lyon, secretary.

Brainard Medical Society.—At the annual meeting of this Society, held at Milwaukee, Wis., Stephen S. Stack, Milwaukee, was elected president, and William Hausman, Kewaskum, secretary and treasurer.

Buffalo Academy of Medicine.—The following officers have been elected for 1901-02; President, Dr. Charles G. Stockton; secretary, Dr. Frank W. McGuire; treasurer, Dr. Charles S. Jewett, and trustee, Dr. Matthew D. Mann.

Wayne County (Ind.) Medical Society.—This Society, at its recent meeting in Richmond, elected the following officers for the coming year: President, Dr. H. B. Boyd, Camden; vice-president, Dr. Harrison Gable, Centerville, and secretary and treasurer, Dr. Stephen C. Markley, Richmond.

Stephenson County (Ill.) Society of Physicians and Surgeons.—At the annual meeting of this Society, held at Freeport, July 11, the following officers were elected: Dr. Smith C. Thompson, Cedarville, president; Dr. John F. Fair, Freeport, vice-president, and Dr. Robert J. Burns, Freeport, secretary and treasurer.

Wood County (O.) Medical Society.—This Society was organized at Bowling Green, July 10, and the following officers were elected: Dr. Joseph C. Lincoln, Bowling Green, president; Dr. Frank D. Halleck, Bowling Green, secretary, and Dr. Byron S. Cranston, Rudolph, treasurer. Drs. C. S. St. John and W. L. Mathers, Bowling Green, and Dr. C. M. Deibert, Milbury, were named as a censor committee.

Wyoming County (N. Y.) Medical Association.—At the annual meeting of this Association, held at Warsaw, July 10, it was voted to join the New York State Medical Association, the advantages of such a step being brought out in a general discussion. The following delegates were chosen to attend the state convention to be held in New York, October 21: Dr. Zera J. Lusk, Warsaw; Dr. George W. Blackmer, Pike; Dr. T. A. Way, Perry Center; Dr. Lyman C. Broughton, Castile; alternates, Dr. L. H. Humphrey, Silver Springs, Dr. George S. Skiff, Gainesville, Dr. Philip S. Goodwin, Perry, and Dr. Carl C. Mann, Warsaw. Officers chosen for the ensuing year were Dr. Carl C. Mann, president, Dr. Philip S. Goodwin, vice-president, and Dr. Gifford Truesdell, Warsaw, secretary and treasurer. The next meeting will be held at Silver Lake.

CINCINNATI ACADEMY OF MEDICINE.

Regular Meeting, June 24, 1901.

The President, Dr. N. P. Dandridge, in the chair.

Cutaneous Treatment by Roentgen Ray.

DR. E. H. SHIELDS presented a case of pigmented nevus of the foot which he was treating by means of the *x*-ray. The result so far had been only fairly satisfactory, though he thought unquestionably healing had taken place in some portions. He also reported three cases of lupus, treated by the same method, one in which the result had been decidedly encouraging; a second is negative; third, still under observation, progresses nicely toward recovery. Exposure to the ray lasted from ten to thirty minutes, average fifteen minutes, without burn in any instance. The parts exposed varied from six to twelve inches from the tube.

DR. MERRILL RICKETTS said that some months ago he had reported a case of multiple sarcoma, in which skin nodules of the right side of the body were particularly prevalent and gave much pain to the patient. Under the influence of the *x*-ray the pain had entirely disappeared and curious to state many of the nodules apparently atrophied, or dried and scaled off. The patient ultimately died of dissemination of the disease but throughout the course pain was absent while under the *x*-ray treatment.

DR. SHIELDS said that he had seen several cases of chronic rheumatism entirely relieved of pain by subjecting them to the rays.

Fibroid of the Uterus Complicated with Pregnancy.

DR. A. G. DRURY reported the following case: M. A., colored, aged 37, primipara; on his first visit, June 2, 1901, he had obtained this history. The woman, a servant, was pregnant. Fearing detection she had procured an abortion on May 21. After the operation she had gone home and continued her usual work. The fetus and placenta were not expelled until the 24th, three days later. She had hidden them in a barrel in the cellar, continuing her work, notwithstanding the pain and hemorrhage, and had worked until she fell in a faint from sheer exhaustion, when he had been hastily summoned. He found her almost pulseless, with short rapid respiration. Thinking death imminent, she gave the above statement when slightly revived. The fetus and placenta were found as she

had stated. Examination showed a patulous os, and an offensive, bloody discharge. On the right side was a hard mass, the size of a fetal head and firmly attached to the uterus. A few hours later she had a chill during which her temperature rose to 102.8. From the second to the eighth the discharge from the uterus was continuous, and the temperature varied from 100 to 104. Pain at times was so severe as to require morphia. Quinin and strychnia were given as tonics and stimulants. The uterus was flushed out each day until the 18th. From the 12th decided improvement was noted until the 16th when she had a severe chill followed by increased pain. At times she was delirious. On this latter date there was a marked increase in the discharge, which was greenish in color. On the 17th a diminution in the size of the tumor was noted. On the 18th he had been called at noon and was informed by the nurse that she had had severe bearing-down pains and that something was protruding from the vulva. On entering the hand for vaginal examination the flow of a greenish fluid saturated the bed. The mass was readily removed and was found to be of about the size of a large orange, sacculated and with dense walls. On the 19th there was marked improvement, diminution in the pulse respiration and temperature, and in the amount and odor of the discharge. She has continued to improve up to date.

Two Weeks' Ovum.

DR. E. G. ZINKE presented a specimen of a two week's ovum aborted by a woman who was already seven weeks pregnant, the latter pregnancy going on to term. He thought that abortion took place on account of insufficient room for development.

Presentation of Specimens.

DR. B. MERRILL RICKETTS presented the following: Case 1.—Wire mattress (Phelp's hernia operation). This specimen was from a dog's abdominal wall in which a mattress of silver wire had been placed fourteen days before the dog's life had been taken. The tissues had grown through the meshes of the mattress, forming an impervious wall. Silk, silkworm gut, kangaroo tendon, catgut and wire were used for sutures and could be seen in their respective places, demonstrating the comparative life and usefulness of these materials for sutures. The catgut evidently became useless two or three days after insertion while the kangaroo tendon lasted much longer. Case 2.—Gall-stone with abscess formation, simulating appendicitis. Patient, a woman, aged 54 years, had suffered from gall-stones for many years, though she had never had clay-colored stools, and at this time there was no icterus. Patient was very frail and was much debilitated; did not weigh over 100 pounds. The entire right abdominal wall was hard and boggy, indicating underlying pus. Chloroform was administered and the incision made a little above the ordinary appendicitis incision, over the point of greatest bogginess, the preponderance of evidence being in favor of an appendicitis. A half pint of thick, non-offensive pus was evacuated immediately under the incision, exposing a cavity below the gall bladder and extending downward. A gall-stone weighing 285 grains, which had sloughed through the gall bladder and which was surrounded by dense adhesions, was found in this cavity. The cavity was packed and drained. The intestine which had been adherent to the abdominal wall and had been cut in the primary incision was then sutured and the woman put to bed. Convalescence was very rapid and the temperature never reached 100 degrees. Case 3.—Gall-stone in a woman of 70 years of age; she weighed 225 pounds; gave a history of severe pain in the region of the gall bladder for a number of years and at the time of examination suffered from intense icterus and clay-colored stools. A cholecystotomy was made and revealed a ball-valve stone in the common duct, which stone was divided and removed in fragments. Weight of stone was 22 grains. Uninterrupted recovery took place. Case 4.—Typhoid fever, operation, recovery. Gall-stone. Woman, aged 21, who had suffered from an attack of typhoid eighteen months previous to the onset of her present trouble. Icterus extreme, stools clay-colored, and complaint of severe pain in the region of the gall bladder. Cholecystotomy was made and the gall bladder was found to contain two ounces of a light-colored albuminous fluid. Sound revealed a stone in the common duct and some small fragments of the stone were removed by means of the curette. In the manipulation the stone disappeared, presumably into the hepatic duct and could not be located thereafter. This stone was also of the ball-valve variety. The cavity of the gall bladder was drained externally, and most of the bile was seen coming through this external opening; the stools are naturally still clay colored, but the icterus is rapidly disappearing and the patient improving greatly in general health. The interesting point in the case is the probable rôle of the preceding typhoid in the production of the stone; this probability is still further strengthened by the age, 21 years, of the patient. Case 5.—Ovarian tumor with twisted pedicle. A woman, 54 years of age, weighing in the neighborhood of 225 pounds, had been bed-fast for three days on account of excruciating pain in the lower right abdominal region. Examination revealed a large tumor apparently in connection with right ovary. Abdominal wall incised and after cutting through about four and one-half inches of fat peritoneal cavity was opened, which opening immediately gave exit to over three quarts of a dark-red fluid. A large ovarian cyst in connection with the right ovary was found with a badly twisted pedicle; this cyst contained a clear fluid and on removal proved to weigh 15 pounds. The abdominal cavity was then irrigated with hot water. The muscular layer was sutured with kangaroo tendon, and the subcutaneous tissues with silkworm gut; recovery uneventful. Case 6.—Cystic tumor, left ovary; hematoma of the right; purulent appendicitis; operation and death in 75 hours from ileus. Patient was aged 24, slight in build, not over 90 pounds, mother of one child, was suddenly attacked with very severe pain in the right side. Examination revealed an enlarged and tender ovary. On opening the abdomen, the right ovary was found to contain a hematoma and the left ovary cystic; both were removed. Examination of the appendix showed it to be enlarged and containing pus; this was also removed. The temperature never exceeded 99 and she declared she suffered no pain. No medicine of any kind was administered. She began to vomit stercoraceous matter 75 hours after operation and died at the end of 80 hours, of ileus.

Villous Polypus of the Rectum.

DR. JOHN H. LANDIS gave the following history: Age of patient, 64 years, occupation, farmer. He had an attack of grippe four years ago lasting one month and has had occasional attacks of what were diagnosed as inflammed hemorrhoids. The polypus was noticed for the first time one year ago when it was suddenly protruded during an act of defecation. It bled slightly and was replaced without special difficulty or pain. Since its first appearance it has been expelled from two to five times daily, the bowel movements during this time containing blood and mucus. It has always been replaced without much difficulty and has been more of a source of annoyance than of suffering. The most distressing symptoms due to its presence have been headache and backache. Both of these symptoms promptly disappeared after its removal. Histologically these tumors are made up of hypertrophied villi, follicles of Lieberkühn and connective tissue, and have a generous blood supply. Clinically they present the characteristics of simple tumors. Occasionally they show malignant tendencies. According to Cripps they are very rare, appear after adult life, usually in old age and frequently attain a large size. The specimen presented this evening was attached to the anterior wall of the bowel about an inch and a half above the sphincter by a short pedicle over an inch wide and one-quarter inch thick.

Branchial Fistula.

DR. H. J. WHITACRE presented a specimen of branchial fistula. The fistulous tract had extended from just above the larynx to right tonsil, and he had removed the entire tract with good result.

Addison's Disease.

DR. G. F. SUDHOFF reported this case: W. J., white, German, single, physique poor, height five and one-half feet, weight

110 pounds, of good habits, occupation porter, admitted to the German Protestant Hospital May 26, 1901. Father died at the age of 75, mother at 58, cause of death in both instances unknown. Has brothers and sisters in Germany, but he knows nothing of them. He had pleurisy four years ago and apparently made a good recovery; was in the German Protestant Hospital on Dr. Sudhoff's service from Dec. 27, 1897, to Feb. 20, 1898, with symptoms of incipient phthisis such as cough, fever, debility and the physical signs of consolidated areas at both apices. Had diphtheria two years ago and follicular tonsillitis one year ago. Present trouble began seven days previous to admittance to the hospital with headache, languor and general debility, loss of appetite; vomited two or three times. Patient appears very nervous and extremely weak; complains of severe pains in the loins especially after sitting awhile; frequently walks with hands on back to render some support; muscular debility seems general and the patient appears almost too weak to walk; has slight cough but no expectoration, and himself states that the cough is on account of the dryness of the throat. Voice feeble and speaking requires considerable of an effort. Temperature 100.8; pulse 84 and very feeble. Appetite poor, has some nausea and vomits occasionally, bowels regular, stools of rather a light color. Micturition frequent, but urine is normal in amount. Skin of face and neck brownish-yellow in color, conjunctivæ white. Heart sounds normal except that the action is very feeble. Slight dulness over both infra-clavicular regions; respiratory sounds feeble and expiration somewhat prolonged over both apices; no rales. Liver dulness normal; muscles tense over lower half of the abdomen, but there was no special point of tenderness. Extremities normal; skin on hands also darkened as though sunburned. Urine amber; reaction acid; sp. gr. 1010; no sugar, no albumin, no bile pigment. He died on May 26.

Autopsy, 14 hours after death. Lungs: small consolidations about the size of a bean at both apices, no cavities in any part of the lungs. Heart: small, paler than normal, myocardial tissue slightly softened. Abdomen: liver and pancreas normal; spleen somewhat enlarged and softened; stomach dilated and mucous membrane pale; intestines normal. Suprarenals: both enlarged, measuring three inches long, two inches wide and one and one-half inches thick, very hard and nodular (nodules about the size of a pea); on section some of these nodules seem to contain cheesy and chalky deposits surrounded by firm fibrous tissue. Microscopic examination: characteristic structure of the adrenals entirely destroyed and the entire organs consist of uniform masses of white, firm, fibrous, wavy bands enclosing lymphoid cells. Here and there masses of a caseous material resembling degenerated tubercle. The points of special interest in this case were: progressive asthenia, cardiac enfeeblement and gastric irritability; pains in the loins without apparently sufficient cause; while the bronzing of the skin to which so much importance has been attached was not well marked, the skin being about the color of one who is badly sunburnt and this latter condition did not increase any in the last two years, during which time he had been more or less under Dr. Sudhoff's observation.

Miscellaneous Cases.

DR. J. L. CLEVELAND. Case 1.—Abscess of the liver. A woman, 70 years of age, with a distended and tender abdomen and a tumor evidently in connection with the liver extending downward as far as the umbilicus. Ten days after his first visit he was called suddenly and found a large puddle of pus on the floor. A sinus was found in the neighborhood of the umbilicus connecting the liver tumor, and was still discharging when he entered the room. He has every hope for her recovery. Case 2.—Splanchnoptosis; strangulated hernia with peritonitis. He was called suddenly to see this patient, 75 years of age, who had been seized with sudden pain in the abdomen and the vomiting of what was described by the family to be pus; he himself did not see any of the vomit. On examination of the abdomen, mindful of the case just reported, he thought he could outline a tumor of the liver also extending downward to the umbilicus. He did not advise operation on account of the age and weakness of the patient, who died in a few days. On autopsy there was a most pronounced enteroptosis, with also descent of other contents of abdomen. The liver was of normal size; what he had mistaken for an enlargement was merely the lowered border of the downwardly displaced liver. There was also present a strangulated hernia with peritonitis. Case 3.—Uremia. Every three or four weeks this patient would have attacks of nausea, vomiting and headache; examination of the urine during this spell would show an almost entire absence of urea and a specific gravity of about 1002, notwithstanding which not more than one pint or at the most two of urine were passed in the 24 hours. The attacks would last three or four days and then entirely disappear.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment will be answered in these columns.]

Treatment of Hay Fever.

Dr. J. Robertson, Cincinnati, in *Med. Council*, states there are four facts dependent on their relation to each other as a basis for theory and treatment of hay fever: 1. There is a constitutional idiosyncrasy. 2. There is an exciting cause. 3. These two acting in conjunction produce the disease. 4. If either the constitutional idiosyncrasy or the exciting cause can be corrected the disease will be mastered.

To remove the exciting cause he dwells upon the inefficiency of the spray and its method of application, as it can only reach the larger and more direct passages, while the inflammatory process extends to tracts of the Schneiderian membrane, which can not be reached by the spray. He therefore strongly recommends the nebulizer as a means of reaching these out-of-the-way places, such as the finer air passages, the sphenoidal and ethmoidal sinuses, the antrum of Highmore and other cavities lined by the Schneiderian membrane. However, he states, it is better, as a first step in the treatment, to spray the nose and throat out with some one of the following:

℞.	Zinci sulphatis	gr. x	66
	Aquæ destil.	℥iv 128	

M. Sig.: Use as a spray in the ordinary cases having a watery discharge.

Where the discharge is profuse, with pain and tenderness, use the following:

℞.	Morphinæ sulph.	gr. ii	12
	Atropinæ sulph	gr. iss	09
	Zinci sulph	gr. xvi	1.00
	Aq. camphoræ, q. s. ad	℥iv 128	

M. Sig.: Use as a spray locally. After using the spray, apply the following in the form of a vapor in the nebulizer to reduce the turgescence and to give temporary relief:

℞.	Cocainæ (pure alk)	gr. viii	50
	Menthol		
	Camphoræ, āā	gr. xx	1 33
	Ol. caryophylli	m. xii	75
	Liq. albolene	℥ii 64	

M. Sig.: Use in the form of a nebula.

For the permanent but less immediate effects he advises one of the following, administered by means of the nebulizer or comminuter:

℞.	Zinci sulphatis	gr. xxx	2
	Creosoti (Beechwood)	℥ss	2
	Glycerini	℥i	32
	Aq. destil., q. s. ad	℥iii	96

Or:

℞.	Quininæ hydrobrom.	℥ss	2
	Iodi (crystals)	gr. x	66
	Acidi carbol.	℥ss	2
	Alcoholis	℥iv	16
	Glycerini, q. s ad	℥ii	64

Or:

℞ Aspidosperminæ .....gr. xv 1
Alcoholis
Aquæ, āā.....℥iv 16
Glycerini, q. s. ad.....℥ii 64

M. Sig.: Use in nebulizer.

[Aspidospermin is a respiratory stimulant and antispasmodic. It can be given internally in doses of one to two grains.]

Or:

℞ Acidi tannici.....℥ss 2
Glycerini .....℥i 32
Aq. destil., q. s. ad.....℥ii 64

Or:

℞ Salol
Chloralis hydratis
Camphoræ, āā.....gr. xv 1
Ol. caryophyl.....m. x 66
Hydrocarbol, q. s. ad.....℥ii 64

M. Sig.: To be used in the form of a nebula.

Coakley, New York City, recommends the following to render the mucous membrane less sensitive to irritants:

℞ Menthol .....gr. xl 2 66
Camphoræ .....gr. xx 1 25
Eucalyptol .....℥i 4
Ol. pini pulmilionis.....m. xxx 2
Benzoinol, q. s. ad.....℥ii 64

M. Sig.: Use in an oil atomizer, every two hours, if necessary.

For six weeks prior to the expected attack he recommends the following:

℞ Potassii iodidi .....℥iv 16
Ext. grindeliæ roberstæ fl.....℥vi 24
Elixiris simplicis
Spts. vini rectif., āā q. s. ad.....℥iv 128

M. Sig.: One teaspoonful well diluted in water three times daily.

The following is recommended by *Jour. des Pract.*, as a local application:

℞ Acidi acetici.....m. iv 25
Resorcin .....gr. iii 18
Sodii chloridi.....gr. viii 50
Aquæ .....℥ii 64

The following combination is of service to relieve the attack:

℞ Heroin .....gr. i 06
Atropinæ sulph. .....gr. 1/25 0025
Caffeinæ cit.....gr. xv 1
Salophen .....gr. lxxv 5

M. ft. Cap. 220, xv. Sig.: One capsule every three hours.

It is evident that constitutional disturbances as well as hereditary dispositions enter into the etiology of hay fever. The sufferers from hay fever are usually neurotic, anemic and poorly nourished. The gastro-intestinal tract and the general elimination should receive due attention in the treatment of patients suffering from this disease.

Dr. E. B. Gleason, in a paper published in the *Internat. Med. Mag.*, states that the attention of the profession has been directed to the fact that the neurotic condition of the patient and the hypersensitiveness of the nasal mucous membrane are often due to an excess of uric acid in the blood, and that this excess should be eliminated by the ingestion of mineral acids. Probably any mineral acid would prove efficacious, but there are two which suggest themselves as particularly efficacious: hydrobromic acid, because of its sedative qualities, and nitromuriatic acid. He states that he prefers the latter prescribed in doses of 3 to 5 minims of the freshly prepared, concentrated acid, after meals and at bedtime, well diluted in half a glass of water. The patient should be instructed to rinse out the mouth each time after taking the medicine. He states that he has observed good results from the above preparation within forty-eight hours, and the relief of all the symptoms is usually sufficient to enable the patient to remain at home in comparative comfort. To prevent a recurrence of the attacks Dr. Bruce, of Cincinnati, recommends a tonic treatment as follows:

℞ Strych. sulphatis.....gr. 1/50 0012
Quininæ sulphatis.....gr. ss 03
Acidi arsenosi.....gr. 1/50 0012
Ferri reducti.....gr. ss 03
Ext. gentianæ.....gr. i 06

M. ft. Capsula, No. i. Sig.: One such capsule after each meal for a month, then continue with two capsules after each meal until the underlying condition is cured.

Dobbs, in *British Medical Journal*, relates that he has obtained apparent immunity from hay fever by the use of a strong ointment of liquor carbonis detergens made with benzoinated lard, and not too thick, to be easily painted on the inside of the nostril and snuffed up well from the loaded brush.

Temporary relief may be obtained by reducing the turgescence of the mucous membrane; to do this, the best preparation is without doubt adrenalin, made up in normal salt solution, in strength of 1 in 5000. It quickly and surely reduces the extreme congestion and swelling of the turbinate bodies and enables the patient to breathe easily through the nasal passages, which previously was an impossibility. Chloretone may be used in conjunction with the above preparation.

Non-Operative Treatment of Hemorrhoids.

According to *Clin. Med.*, a careful and thorough washing of the parts after each defecation should not be neglected, and then the use of astringents will be found of value. But should be preceded by a thorough cleansing with soap and hot water. The following is recommended:

℞ Tinct. catechu .....℥ii 8
Aquæ .....℥ii 64

M. Sig.: Use as an injection.

To Avoid "Prickly Heat."

Not a few people are distressed during the hot months with an itching and burning sensation of the skin, accompanied by a fine eruption. This is caused by the perspiration, which can not readily evaporate and thus produces the irritation. As stated in *Clin. Med.*, it will be found better to resort to soap and water, used frequently, and to avoid alcoholic and alkaline washes. Once a day, perhaps, the irritated parts should be gently bathed, then dried thoroughly, and afterwards anointed with cocoanut oil. It is absorbed readily and should be applied with the hand. It is not greasy and will not soil the clothing unless an excessive quantity is used.

Specific Mucous Patches.

M. Lutaud recommends the following as a local application to vulvar mucous patches when mercurials are not tolerated:

℞ Chloralis hydratis .....℥iiss 10
Tinct. eucalypti.....℥v 20
Aquæ .....℥v 160

M. Sig.: Apply locally.

Treatment of Constipation.

Sir James Sawyer, as noted in the *Med. Record*, states that too many people desire a strong purge, but they should be educated to a more reasonable idea. He states the following rules should guide the practitioner: 1. We should never leave these things to our patients; all should be under our control. 2. We should never give drugs until constipation can not be cured without them. 3. We should never give drugs without well regulated adjuvants of alvine relief. The steady use of purgatives shortens life. He emphasizes the importance of exercise before breakfast and dinner, as follows: 1. Exert pressure on the liver, by placing the heels together, raise the arms at right angles to the body and rotate them backwards and forwards two or three times. 2. Separate the feet, raise the arms and sway from side to side until the hand touches the leg below the knee. 3. The chief points of accumulation are

the cecum and the sigmoid; these parts may be compressed by the psoas and iliacus muscles by standing beside a table and putting first one foot and then the other upon it.

Green vegetables should be taken; fruits, especially apples (cellulose excites peristalsis), and marmalade are excellent. As to treatment by drugs, he prefers some preparation of aloes, and considers that belladonna and nux vomica are of little value. He prescribes the following:

R. Aloes soc.....gr. i-iii
Ferri sulph.....gr. 1/4
Ext. hyoscyami .....gr. i

M. ft. pil., No. i. Sig.: At bedtime when necessary.

The quantity requires readjustment, generally a reduction.

Medicolegal.

Right to Make and Use Medical Preparations.—The Supreme Court of Minnesota holds, in the case of the J. R. Watkins Medical Company vs. Sands, that a medical preparation may be used and manufactured by any one who lawfully and in good faith acquires knowledge of its composition, and such person may publish the fact that the product is manufactured in accordance with the original formula, and the fact that such preparation has become popularly known by the name of a certain person gives no exclusive right to any one to appropriate the name as a trade-mark.

Discretion as to Allowances for Care of Sick.—Section 3391 of Mills' Annotated Statutes of Colorado provides that when any person, not coming within the definition of a pauper, shall fall sick in any county of that state, not having money or property to pay his board, nursing, or medical attendance, the county commissioners shall give such assistance to such person as they may deem just and necessary and may make such allowance as they shall deem just and equitable. This statute, the Supreme Court of Colorado holds, in the case of the Board of County Commissioners of Rio Grande County vs. Lewis, was intended to and vests in the board a discretion to allow and pay, in cases of this character, what may be deemed reasonable and fair. Such discretion, as applied to public functionaries, it goes on to say, means the power or right of acting officially, according to what appears just and proper under the circumstances. Courts will not interfere with the exercise of such discretionary authority unless it has been abused. All reasonable intendments must be made in favor of the acts of officials who are under obligations to perform their duties correctly, so long as they appear to be acting in good faith. In order to constitute an abuse of such discretion, it must appear that it was exercised on grounds, or for reasons, clearly untenable, or to an extent clearly unreasonable.

Rendering Services at Agent's Request to Strangers.—The case of Smith vs. the Georgia & Alabama Railway was brought by a physician to recover for services rendered in response to a telephone message to go to the railway depot to see a man who had been seriously hurt. The message, it would seem, was sent by a local agent of the railway company. The injured man was an employe of a drayman, and was injured while endeavoring to move a heavy box from the railway company's warehouse to a dray. The theory on which the action was brought was that the railway company was liable for the professional services rendered to the man, because a local agent of the company at that station had employed the physician to perform such services. And the physician undertook to establish authority on the part of the agent to employ him for the railway company by showing that he had previously, while local agent for the company at another station, repeatedly employed him to "perform medical services of a similar character," and that the company had in every such instance paid for the services rendered. But this evidence, the Supreme Court of Georgia holds, was not sufficient to warrant a finding that the railway company held out this local agent as possessing authority to employ for it physicians to attend strangers—persons to whom the railway company owed no legal duty whatever. While the railway company may have previously paid the physician when employed by that agent "to perform medical services of a similar character," as alleged, the court points out that it did not appear that the agent ever previously employed him or any one else to perform such services to one to whom the company owed no duty, or that the company had ever in any way recognized his authority so to do. Ratification by the railway company could not be implied from its previous acts in paying the physician when employed by the agent "to perform medical services of a similar character," when it did not appear that they were performed under substantially similar conditions and circumstances. Wherefore, the court holds that, as there was an entire failure to show that the agent had any authority to employ the physician to perform the services in question, there was no error in directing a verdict for the railway company.

Quarantine Power no Authority to Buy Vaccine Matter.—The question before the Supreme Court of Georgia, in the case of Daniel vs. Putnam County, was as to the liability of the county to pay for certain vaccine points alleged to have been furnished to and for the use of the county through and by the orders of the commissioners of roads and revenues of the county, and which were actually received and used by and for the benefit of the county. The state constitution provides that the general assembly shall not have power to delegate to any county the right to levy a tax for any purpose, except, among certain other things, for quarantine. Because of this and the fact that the commissioners could not bind the county by the creation of a debt for the payment of which it had no power to levy a tax, the court pronounces it perfectly plain that they had no power to bind the county to pay for the vaccine points, unless the word "quarantine," as used in the constitution, is broad enough in its meaning to include the purchase of vaccine matter to be used in preventing the spread of the smallpox: and the party suing, recognizing this, contended that the vaccine matter which he furnished to the county authorities was purchased and used by them for "quarantine" purposes. But the supreme court does not think that this was a sound contention. It says that to quarantine persons infected with or who have been exposed to the smallpox is one way of preventing the spread of the disease in a community: to vaccinate people who are not infected with the disease, in order that they may become immune therefrom, is another way of accomplishing the same purpose. But vaccination is one thing, and quarantine is another. To quarantine persons means to keep them, when suspected of having contracted or been exposed to an infectious disease, out of a community, or to confine them to a given place therein, and to prevent intercourse between them and the people generally of such community. Persons who are merely vaccinated, and then allowed to go when and where they please and to mingle freely with the other members of the community, are in no sense of the word quarantined. The preventive measure adopted in their case tends to protect them both from contracting the disease and from being quarantined. Moreover, the court says of the ordinary that he is empowered to provide a hospital for those afflicted with the smallpox, and to furnish them (not the members of the community at large) with medical or other attention that, in his judgment, those so afflicted may require, but he cannot furnish vaccine matter and employ physicians to vaccinate the outsiders. He is not authorized to furnish people outside of the hospital, and not afflicted with the disease, with medical or other attention. He can provide regulations to prevent the spread of the smallpox, but the regulations must be quarantine regulations. The expenses of quarantine and other attentions, either medical or nursing, which he is authorized to incur, and of which he must render a proper and just account, are limited to the cases of those whom he may have under control, and who submit to the quarantine regulations. The law has not, however, the court says, left the counties of Georgia powerless to procure vaccine matter to be used in preventing or checking the spread of the smallpox. The governor is authorized and required to procure the necessary quantity of genuine vaccine matter, either by purchase or manufacture and have the same transmitted to the ordinaries of each county in the state for immediate use.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

Medical Record (N. Y.), July 13.

1 *Hydrophobia and the Pasteur Methods. Charles W. Dulles.
2 *The Etiology of Alopecia. Delos L. Parker.
3 *The Future Treatment of Hay-Fever. H. Holbrook Curtis.
4 *The Present Status of the Carcinoma Question. N. Senn.

New York Medical Journal, July 13.

5 *The Home Treatment of Pulmonary Tuberculosis. Robert H. Babcock.
6 *Antitoxin and Intubation in the Treatment of Laryngeal Diphtheria, with a Summary of 230 Operations. Burt Russell Shurly.
7 *The Influence of Mouth-Breathing upon the Dental Arch. M. D. Lederman.
8 A Leaf from the Ancient History of the Anatomy of Catarrh. Jonathan Wright.
9 Address in Pathology, Delivered at the Meeting of the Texas State Medical Association, at Galveston, Texas, April 26, 1901. Allen J. Smith.
10 *Neuroses as Seen in Orthopedic Practice. B. E. McKenzie.
11 Sexual Intemperance: Some Explanation of What Is Meant by the Term. Jennie G. Drennan.
12 *An Operation for Prominence of the Auricle. Thomas R. Pooley.

Philadelphia Medical Journal, July 13.

13 The Father Reigel Murder Case. William G. Porter.
14 *Coxalgia. E. H. Coover.
15 The City's Obligation to Provide Special Education for Defective Children. Clarence E. Meleney.
16 *Remarks on the Treatment of Eczema. W. R. Inge Dalton.
17 *Skin Grafting by Means of Freezing, with Reports of Some Cases. Gaston Torrance.
18 Report of a Case of Complete Right Oculomotor and Complete Left Trifacial Paralysis. C. A. Veasey.
19 Photo-Mechanical Reproduction. (To be continued.) B. H. Buxton.

Boston Medical and Surgical Journal, July 11.

20 *Two Cases of Pregnancy Complicated by Mitral Insufficiency. Henry D. Chadwick.
21 *Albuminuric Retinitis and Uremic Amaurosis, with Especial Reference to Their Occurrence in Pregnancy. Edmund W. Clap.
22 Congenital Pelvic Malposition of Left Kidney in a Woman. John W. Dewis.
23 A Case of Extra-uterine Pregnancy: Diagnosis at End of Second Month: Operation: Recovery. Oscar J. Pfeiffer.

American Medicine (Philadelphia), July 13.

24 *Removal of the Female Urinary Bladder for Malignant Disease. Matthew D. Mann.
25 *Total Extirpation of the Urinary Bladder. J. Wesley Bovée.
26 *Ankylostomiasis in the United States. Report of a Case. Herman B. Allyn and M. Behrend.
27 *Phlebitis Following Abdominal Operations. Albert Vanderveer.
28 Report of a Case of Carcinoma at the Cardiac End of the Esophagus, a Distance of 21 Inches from the Incisor Teeth, in a Man 5 Feet, 3 Inches Tall. C. D. Spivak.
29 A Medico-Surgical Bedstead. Adolfo Luria.

Medical News (N. Y.), July 13.

30 The Diseases of Nutrition in Infants. T. M. Rotch.
31 *The Medicinal Treatment of Summer Diarrhea. Thomas S. Southworth.
32 *The Hygienic Treatment of Summer Diarrhea of Infants. Henry C. Hazen.
33 *After-Treatment of Summer Diarrhea of Infants and Children. William M. Taylor.
34 *The Clinical Features and Treatment of Acute Bronchitis in Children. Charles O'Donovan.
35 *Empyema. John A. Hartwell.
36 *Sexual Neurasthenia in the Male: A Plea for a More Accurate Use of the Term: Treatment of the True Form with Citation of Cases. Ramon Guiteras.
37 *Masturbational Neuroses. William C. Krauss.

St. Louis Medical Review, July 13.

38 The Heart Lesions of Infancy and Childhood. I. A. Abt.

The Cincinnati Lancet-Clinic, July 13.

39 *The Etiology and Treatment of Rheumatoid Arthritis and Allied Affections. Gilbert L. Bailey.
40 The Old Doctor. George J. Monroe.
41 Urethral Laceration: Union Without Suture. C. S. Muscroft and H. A. Ingalls.

Medical Age (Detroit), June 25.

42 Nature in Obstetric and Gynecologic Practice. B. D. Harison.
43 The Protyle as the Basis of Elemental Individuality. Noah E. Aronstam.
44 The Treatment of Epilepsy. Daniel R. Brower.

American Practitioner and News (Louisville), May 15.

45 *Adenomata and Adenocystomata of the Ovary; Cysts and Cystic Degenerations of the Kidney. August Schachner.
46 *Some Questions Regarding the Danger of Septic Infection from Certain Remedies and Methods in Common Use. A. G. Blincoe.

Louisville Monthly Journal of Medicine and Surgery, July.

47 Two Cases of Cholecystitis Associated with Gall-stone, Simulating Appendicitis. F. W. Samuel.
48 Valves of the Rectum. Geo. J. Monroe
49 Ventral Hernia: Prevention and Cure. Louis Frank.
50 The Necessity for Medical Legislation. J. N. McCormack.
51 Suspension of Uterus. R. Lindsey Ireland.
52 Popular Address, Kentucky State Medical Society. Young E. Allison.
53 Some Remarks upon the Treatment of Various Types of Anemia. R. D. Moore.

Journal of Cutaneous and Genito-Urinary Diseases (N.Y.), July.

54 *Sarcoma and the Sarcoid Growths of the Skin. James C. Johnston.
55 A Case of Gummatous Ulcer of the Bladder with Abscess of the Prostate and Left Seminal Vesicle, Complicated with Retention, Treated by Sectio-Alta and Excision with Curettement. Granville MacGowan.
56 *Examinations of Urine in Diseases of the Male Sexual Organs. Louis Heitzmann.
57 *Inversion of the Tunica Vaginalis for Hydrocele. Robert H. Greene.

Toledo Medical and Surgical Reporter, July.

58 General Considerations of Fractures. S. S. Thorn.
59 Mastoiditis. Frank Jacobi.
60 Therapeutic Uses of Eucalyptus, with Report of a Case. C. Wm. Newton.

Indiana Medical Journal (Indianapolis), July.

61 *The Ambulatory Treatment of Fractures. J. H. Cannon.
62 *Some Uses of Local Anesthesia in Genito-Urinary Surgery. Wm. N. Wishard.
63 *The Present Position of the Diagnosis of Cancer of the Stomach. Alois B. Graham.
64 A Consideration of the Ureter, Particularly as Affected by Pregnancy. Frederick R. Charlton.
65 Glioma of the Retina. F. C. Heath.
66 Shock: Its General Consideration and Relation to Surgical Procedures. William M. Wright.

New Yorker Medicinische Monatsschrift, June.

67 Ein Fall von angeborenem Colobom des oberen Augenlides. A. Schapringer.
68 Casuistische Faelle aus der Praxis. Carl Hoening.
69 Klimatische und balneologische Curorte in Tyrol. (Conclusion.) Dr. Jur. Baumfeld.

Medical Summary (Philadelphia), July.

70 The Diet of Typhoid and Some Cases of Interest. Wm. Edgar Darnell.
71 Impacted Cerumen. B. A. Washburn.
72 Post-Abortion Hemorrhage: How to Control It. Geo. H. Candler.
73 Treatment of Hypertrophied Prostate Glands. (Continued.) H. B. Stanley.
74 Typhoid Fever—Pneumonia with Effusion; Operation. Ira A. Marshall.
75 Is It So? Some Sense Wanted—Curious Case, Etc. (Methylene Blue, Rabies, Etc.) Ben H. Brodnax.
76 The Seidlitz Salt in Catarrh of the Stomach and Rheumatism. W. C. Buckley.

Buffalo Medical Journal, July.

77 *The Prevention of Tuberculosis. B. G. Long.
78 How Are We Educating Our Children? A. W. Bayliss.
79 Malaria Representing Three Varieties Observed in Buffalo. Julius Ullman.
80 Physiology of the Kidney. (Continued.) Byron H. Daggett.

Kansas City Medical Index-Lancet, July.

81 Headaches. George N. Thomas.
82 What Has the Bacillus Pestis to Do with the Bubonic Plague? James Clements.
83 The Relative Value of Medical Advertising. John Punton.
84 Fistula in Ano. J. M. Frankenburger.

Oklahoma Medical Journal (Guthrie), June.

85 *Some Diseases Complicating Pregnancy. Bertha H. Campbell.
86 The Use of Anesthetics in Normal Labor. S. F. Roberts.

Columbus Medical Journal, June.

87 Address Delivered before Ohio Medical University. Louis E. Holden.
88 Address on Behalf of the Faculty—Ohio Medical University Commencement. Josiah Medbery.

89 Fibrinous or Plastic Bronchitis. Starling Loving.
90 Sewage Disposal or Purification: The Chemical Treatment. C. O. Probst.
91 Septic Treatment. A. M. Bleile.
92 The Filtration or Land Process. D. N. Kinsman.
93 Water Pollution. G. M. Clouse.

Medical Mirror (St. Louis), June.

94 *Internal Medicine in the Nineteenth Century. N. S. Davis, Jr.
95 *The Value of Clinical Microscopy, Bacteriology and Chemistry in Surgical Practice. John A. Wyeth.

International Journal of Surgery (N. Y.), July.

96 Rheumatoid Arthritis. W. H. Neilson.
97 Nose and Throat Work for the General Practitioner. (Continued.) George L. Richards.
98 Management of Placenta Previa. J. G. Kelly.
99 Regional Minor Surgery. (Continued.) George G. Van Schaick.
100 The Surgical Assistant. Walter M. Brickner.
101 Clinical Observations on Amenorrhea and Dysmenorrhea. F. Levasseur.
102 Fracture of the Cervical Vertebræ—Report of a Case. D. C. Bowen.
103 Treatment of Burns. W. W. Pugh.

Medical Dial (Minneapolis), July 1.

104 Events in the History of American Surgery—A Brief Review. Franklin Staples.
105 *The Successful Treatment of Aural Pain. H. A. Beaudoux.
106 The Science and Art of Surgery: Its Progress During the Nineteenth Century, and Its Prospects for the Twentieth. R. W. Garrett.

Mississippi Medical Record (Vicksburg), July.

107 Gastro-Intestinal Infection of Children. J. C. Ballard.
108 Quinin Hypodermically—Its Indication and Technique. J. M. Dampeer.
109 What Was It? (Post-Delivery Spasms.) Ben H. Brodnax.

Alienist and Neurologist (St. Louis), July.

110 The Physician's Duties in Committing Insane to the Hospital. Prof. Hoche.
111 Heredity and Epilepsy. Sanger Brown.
112 Fatigue in Its Relation to Consciousness. W. Xavier Sudduth.
113 *The Prophylaxis of Insanity. A. DeBord Young.
114 Combined Monobrachial Chorea and Writer's Cramp from Occupation Strain. C. H. and Marc R. Hughes.
115 Degeneracy Stigmata as a Basis of Morbid Suspicion. (To be continued.) James G. Kiernan.
116 *Race Degeneracy and Dental Irregularities. E. S. Talbot.
117 The Development of the Sexual Instinct. (To be continued.) Havelock Ellis.
118 The Legal Disabilities of Natural Children Justified Biologically and Historically. E. C. Spitzka.

Archives of Pediatrics (N. Y.), July.

119 *The Early History of the Summer Diarrheas of Infants. W. D. Booker.
120 *A Report of Twelve Operations on Infants and Young Children During Spinal Analgesia. William S. Bainbridge.
121 *Hemorrhage from a Pyothorax. A. Jacobi.
122 Report of Two Cases of Tuberculosis of the Hip and Spine, Treated with Large Doses of Creosote. Agnes Walker.

Medical Standard (Chicago), July.

123 A Few Selected Cases from a Surgical Clinic (Enlarged Prostate, Keloid, Etc.). John B. Murphy.
124 Appendicitis and Its Treatment. A. J. Ochsner.
125 Rectal Fistula. J. Rawson Pennington.
126 Drug Habits and Their Treatment. T. D. Crothers.
127 Some Obstinate Digestive Disorders. David Paulson.

Texas Medical News (Austin), June.

128 State Medicine—Medical Jurisprudence. R. H. Harrison.
129 Typhoid Fever. M. M. Myers.
130 When and Where to Operate for Appendicitis. Albert G. Krueger.
131 A Few Remarks on the Treatment of Albuminuria. John S. Lankford.
132 Hernia Complicated by Hydrocele of Chord and Retained Testicle; Operation. H. B. Hill.

Memphis Medical Monthly, July.

133 Comparative Value of Iodids and Mercury in the Treatment of Syphilis. Eugene Carson Hay.
134 Observations Based on Additional Experience with Intubation of the Larynx in Laryngeal Diphtheria. Richmond McKinney.
135 Observations on the Use of Hypnotics. H. P. Coile.
136 Hypodermic Medication. L. G. Bouton.

Southern Practitioner (Nashville), July.

137 Annual Address at the Meeting of the Association of Medical Officers of the Army and Navy of the Confederacy. James M. Keller.
138 Corneal Ulcers. Hilliard Wood.
139 Thiocol and Bisol. Q. C. Smith.
140 Summer Diarrhea in Children. H. S. Baketel.

AMERICAN.

1. **Hydrophobia.**— Dulles' article is an attack on the Pasteur method of treatment for rabies. He claims that it has not lessened the death-rate from this cause and that the statistics in its support are fallacious. He states that we will never get any correct ideas of that disease until the profession gives up the use of caustics, narcotics and violent restraint in the treatment of the fully developed disorder.

2. **Alopecia.**—The theory of Parker—elsewhere formerly noticed—that the loss of hair is due to defective breathing and air stagnation in the upper lung is here repeated and the author has attempted experiments to demonstrate it. The superior costal type of respiration is favorable to hair growth and as women use this more than men, they are less likely to suffer from loss of hair. The experiments he performed were done by the use of respired air in a closed receiver with water so that the latter absorbed the air and was used as an injecting liquid. The experiments were on pigeons and he gives illustrations showing what he considers the effects of this cause. He suggests the name trichotoxicon for the toxic product which is the cause of alopecia and asks if it is developed when respired air is chambered in the presence of warmth and moisture outside the lungs whether the same substance will be developed when respired air is chambered with the same surroundings inside the lungs. It certainly is difficult, he says, to think of any reason why it should not. Again, if trichotoxicon circulating in the blood current of lower animals exerts a specific action on certain tissues of that animal, is it proof that the same substance introduced into the blood of a human being will exert a like influence on tissues of an analogous nature? While proof seems to be too strong a word to use in this connection, it is not too much to say that it is a great probability that it will; hence, he thinks it not unreasonable to conclude that alopecia of the type under consideration is caused by an auto-infection in which trichotoxicon is taken up by the blood from the air-cells in the lungs where it has been elaborated during decomposition of organic matter normally present in respired air.

3. **Hay Fever.**—After first referring to his former paper on the subject, Curtis gives further results and testimonies as to the effect of the use of preparations of ragweed for the cure of hay fever, that is, more particularly, for that form which is induced by the pollen of this plant. He thinks it is possible that tincture of golden rod or some other plant may be found efficacious in those cases where ragweed fails. Thus far his investigations have been very encouraging in affording a means for checking this uncomfortable ailment.

4. **Carcinoma.**—According to Senn, carcinoma is due to atypical proliferation of the epithelial cells from the matrix of embryonic cells of congenital or post-natal origin. The law of legitimate succession of cells holds true in the origin and growth of tumors, both benign and malignant, as well as in the production of normal and inflammatory tissue. Being primarily epithelial, carcinoma in the mesoblastic tissue is impossible except by displaced inclusions of epithelial tissue. The histology and histogenesis of carcinoma are against the parasitic origin of the disorder. The stroma of carcinoma consists of pre-existing connective tissue fibers and their descendants. Carcinomatous cells usually multiply by irregular atypical karyokinesis and this pathologic segmentation is an important indication of malignancy and of considerable diagnostic value. The progressive extension of tumors to adjacent tissues and organs, regardless of their structure, is strong proof of carcinomatous character. Regional metastasis takes place exclusively through the lymphatic channels and the pre-existing lymphatic structures take no active part in the origin and growth of secondary tumors. The general dissemination of carcinoma usually takes place by direct implication of veins in the primary or secondary tumors. The carcinomatous cells reach the venous circulation through the formation of an

intravenous tumor thrombosis or carcinomatous endophlebitis or through perforation of the vein walls by carcinomatous cells. Retrograde intravenous extension is due to the transportation of minute emboli of carcinoma cells against the current surrounded by a mantle of blood corpuscles which move step by step on the intima. Retrograde extension through lymphatics may take place in the same manner, but is more frequently the result of carcinomatous endolymphangitis. The increase of carcinoma is more apparent than real and heredity is a generally recognized predisposing cause. As a rule it occurs in elderly persons, but occasionally is met with in individuals under 25 and then is specially malignant. It seldom follows a single injury, but generally follows repeated or prolonged irritation. Among the predisposing causes must be enumerated racial, climatic, and topographical influences. Chronic inflammatory products, cicatrices, and benign epithelial tumors are favorable local conditions. The positive results of implantation and inoculation experiments have thus far failed in establishing the parasitic theory and a careful study of the experimental researches and the bacteriologic and histologic investigations do not warrant us at present in claiming a parasitic origin for carcinoma. The experience of centuries with medication has demonstrated that thus far carcinoma is not materially bettered in this way. Direct medication of carcinomatous tissue by parenchymatous injections has no influence, while the injection of sclerogenic substances into the surrounding connective tissue appears to restrain the local extension by impairing the blood supply. Local applications of any kind for ulcerative carcinoma can be only palliative at best. The actual cautery and chemical caustics have only a limited field of usefulness in open inoperable carcinoma and should never be used in treatment of closed carcinoma in place of the knife. The serum treatment has yielded only negative results. The early and radical operative treatment offers the only prospect for permanently eliminating the disease, which can be determined only after a lapse of ten years or more after operation. Radical operation should never be attempted unless local conditions and the general health are such as to warrant it. Admitting carcinoma to be the product of erratic, planless cell growth, not governed by the influence of the regular normal tissue change, it appears logical to make experiments and observations to find the remedy which will destroy the tumor by causing early and steady degeneration of its parenchyma, or which possesses the property of converting embryonic into mature epithelial cells, thus converting a carcinoma into a benign epithelioma.

5. **Home Treatment of Tuberculosis.**—The essentials of success in the treatment of pulmonary tuberculosis are building up the hygiene of the patient's daily life, this including the building up of tissue resistance by super-alimentation, sojourn in the open air as much as possible under conditions determined by the patient's temperature, hydrotherapy, and careful and methodical regulation of life. While these conditions can be best met in a sanatorium, they can be obtained by patients at home, regardless of climate. For building up the system Babcock relies largely on a concentrated nutrition with milk and eggs properly seasoned, and absolute rest in the open air as long as the temperature rises above 99 F. There is no antipyretic so suitable and efficient as fresh cool air. Hydrotherapy is also important because it is stimulating and generally invigorating. Beginning as a sponge bath with tepid water given by a nurse and followed by vigorous friction, it should gradually be made more and more severe until at length the invalid can endure a shower bath of cold water or the so-called "pail douche." The only essential condition is that it be always succeeded by good reaction. Lastly, the daily regime must be faithfully and systematically persevered in. The physician should see his patient often enough to keep control of him, to give in detail the requirements and to enforce carrying out of all orders.

6. **Antitoxin in Diphtheria.**—Shurly gives a summary of results from 230 operations and insists on the value of the antitoxin and early use of the tube when respiration is obstructed. He says no method of treatment in any case demonstrates more fully than antitoxin the value of bacteriologic and chemical research and there are few greater medical inventions than the O'Dwyer tubes.

7. **Mouth Breathing.**—The various theories as to the influence of mouth-breathing in the development of the dental arch are noticed by Lederman, who holds that it does influence the growth. He insists on the removal of post-nasal adenoids as early as possible.

10. **Neuroses in Orthopedic Practice.**—The cases published here appear to be purely neurotic or functional disturbances relieved by judicious treatment. McKenzie insists on the importance of early diagnosis, systematic training and careful individual treatment. If there is an actual organic condition co-existing, it should be thoroughly attended to, but the main key to treatment is discipline, not that which calls for submission, but that which succeeds in educating patients to be self-reliant.

12. **Auricular Deformity.**—Pooley recalls here the operation first performed and described by the late Dr. Edward T. Ely and reports a case in which he closely followed Ely's method for reducing deformity of the auricle. The operation consisted essentially in excising a strip of skin and subjacent tissue on the back of the auricle at the groove between it and the side of the head, the inner border of the excision being on the auricle, and a smaller portion of cartilaginous substance then, as it were, taking a gore or reef out of the prominent auricle. The results were good. He calls the attention of the profession to this method, which he thinks can be highly recommended.

14. **Coxalgia.**—A new form of treatment recommended by Coover is the surrounding of the joint with an ice-cap, kept constantly replenished. Cure soon followed the application in the case reported. Night-sweats disappeared within a week and sleep was better and free from pain. In fifteen days the patient was relieved of all suffering, though the knee and heel taps were still painful. Cure seemed complete in about six months. No extension or counter-extension was employed. He reports two other cases, one of a lady who was cured, and the other of traumatism of the hip joint, which was greatly improved.

16. **Eczema.**—Dalton maintains that the treatment of eczema consists in taking into consideration the general underlying conditions, not forgetting the stage of the disease and any abnormal conditions of the other organs which may aggravate the condition. Neurotic or anemic patients should have tonics, such as phosphorus, iron and mineral acids. A rigid dietary should be enforced; meat, if allowed at all, should be given only once a day; no oatmeal, no strawberries and no sugar, even in tea or coffee. This should be kept up for several weeks. Water should be drunk in large quantities. The alimentary canal should be kept as antiseptic as possible by naphthalin, charcoal, and ipecac. He has lately been using ichthyol combined with arsenic in doses of 1/60 to 1/30 of a grain of ammonium sulph-ichthyolat with 1/20 to 1/40 of a grain of arsenic, three times a day after meals. Water for bathing purposes should be rendered alkaline, and local irritants of any kind avoided. If the eczema is caused by parasites, germicides are required and in squamous varieties 5 per cent. ointment of chrysarobin and pyrogallol or ichthyol ought to be exhibited, if there is not much secretion. All those etiologic factors springing from neurotic conditions, anemia, leukemia, constipation, etc., whether of local or general nature, internal or external, should be completely regulated and proper remedies prescribed.

17. **Skin Grafting.**—While looking around for some convenient and simple method of skin grafting without using general anesthesia, freezing with ethyl chlorid suggested itself to Torrance and he reports four cases in which it was employed with excellent results. He thinks the method specially applicable where the surrounding tissue has become degenerated, as the newly formed skin apparently partakes of the character of the graft. The method is painless and enables one to cover considerable areas at a sitting and, of course, anesthesia is

not required. It may be employed in private practice as well as in hospitals.

20. **Mitral Insufficiency in Pregnancy.**—Chadwick reports two cases which have filled him with a wholesome dread of mitral insufficiency in the pregnant condition, and led him to think that the only appropriate treatment of these cases is to watch the patient closely from the beginning, and as soon as lack of compensation is seen, to advise and urge, for the necessity of saving her own life, the termination of pregnancy as soon as possible.

21. **Albuminuric Retinitis and Uremic Amaurosis.**—These conditions are rare in pregnancy, but very important when they occur. Albuminuric retinitis is a disease accompanied by immediate visible changes in the eye with albumin always present in the urine. It may occur at any time during the pregnancy, especially beginning during the first two months or after the sixth month, and its prominent symptom is gradual failure of vision. It is apt to recur in successive pregnancies, though not necessarily so, each recurrence producing more and more damage. Uremic amaurosis is a disorder of the visual apparatus not accompanied by immediate visible signs though it may finally lead to atrophy. It occurs late in the pregnancy, usually with other signs and symptoms of eclampsia, so that it seldom has to be considered alone. It apparently never destroys the vision at the first attack and is apt to recur in successive pregnancies. The treatment of both conditions is the treatment of albuminuria with rest for the eye, influenced by atropin and dark glasses, if necessary. The prognosis of both forms is generally favorable for the first attack but less so for recurrences. The prognosis for the sight is bad in albuminuric retinitis if it comes on before the sixth month, especially if it begins during the first two months. Abortion should be considered in albuminuric retinitis, occurring early, if the retinitis is of a very severe type and hemorrhagic, or if a slight retinitis progresses under treatment, remembering that in these cases the life of the child is uncertain, and that the mother runs grave risks of eclampsia if the pregnancy goes on to term. Occurring after the sixth month it is better to wait and watch and not to induce labor unless other symptoms are demonstrated. In subsequent attacks it may be necessary to do so.

24. **Extirpation of the Bladder.**—Mann reports two cases of extirpation of the bladder by implantation of the urethra and ureters into the vagina, the method being described. The abdomen is opened by incision down to the symphysis, the patient put in the Trendelenburg position, the peritoneum cut from side to side across the fundus of the bladder and then stripped away. The bladder is also separated from the front wall of the pelvis as far down as the neck. After the bladder is all loosened except at the base, the neck is first tied and then cut with the scissors, the finger being introduced into the urethra as a guide. The incision is then carried through the anterior vaginal wall, so as to include the whole base of the bladder, and to cut the ureters just as they enter the bladder wall, the finger in the vagina aiding materially in this step. The piece to be removed from the anterior vaginal wall to which the base of the bladder is attached, is about as large as a silver dollar. In this way both the ureters and urethra open directly into the vagina. It is entirely unnecessary to try to do anything with the ureters as they continue patulous and discharge into the vagina after cicatrization. The hemorrhage is slight and after the removal of the bladder and the body of the uterus, the tubes and ovaries can be removed. The peritoneal wounds made by removing the bladder and uterus are closed separately. If the uterus is involved in the carcinoma the technic will be somewhat different. After opening the abdomen and cutting the broad ligaments to the uterine cervix, a flap of peritoneum should be stripped from the back of the cervix and the vagina in the cul-de-sac. A peritoneal flap is also separated from the anterior surface of the cervix and the uterine arteries tied, or the anterior branch of the anterior branches of the internal iliacs may be tied so as to cut off all the blood-supply of the pelvic floor. The peritoneum over the bladder is then cut transversely and the bladder enucleated. After the neck has been tied and cut across, the vagina is incised in front and the incision then carried around on each side so as to meet the opening already made in the posterior fornix. In this way the bladder, the whole anterior vaginal wall and the uterus are removed without separating them and the danger of infection of the surrounding tissue is much lessened. The peritoneum covering the bladder and cervix in front and behind must be left intact, unless it be infected. When sutured it should entirely cover the peritoneal floor. For the after-treatment, the newly-made bladder should be kept drained by a self-retaining catheter introduced into the urethra and the cavity washed frequently with some antiseptic solution. The administration of benzoate of ammonium in 20 gr. doses, aids in keeping the urine free from germs and favors healing. If the vagina is not closed, frequent vaginal douches must be used, care being taken to ensure the douche entering the space left by the removal of the bladder. He thinks the method has its advantages, but whether the vagina should be closed at the time of extirpation is a thing to be decided. In the future he will do it, if the patient's condition warrants.

25. **Extirpation of the Bladder.**—After a discussion of the subject and giving a tabulated report of cases from the literature, Bovee offers the following conclusions: 1. Until a more satisfactory plan of disposal of the ureters is found cystectomy should never be undertaken for conditions other than exstrophy, when partial extirpation of the organ is possible. Even a very small portion of the bladder into which the ureters may be debouched is practically free from the great danger of infection incident to bowel grafts, and further such disposition of the ureters is more easily executed. 2. For exstrophy the Maydl and the Pozzi operations are quite satisfactory, though the danger of infection seems ever present. 3. Rectal graft of the ureter in its continuity and skin grafting of this duct are highly dangerous. 4. Uretero-vaginostomy is practically free from ascending infection though it gives far from perfect results. 5. The urethral graft of the ureter seems free from infection, but the constant dribbling of urine is but slightly ameliorated by the use of a urinal. 6. The Mauclaire-Gersuny operation is worthy of a further application, inasmuch as it provides for both sphincterless bladder and bowel.

26. **Ankylostomiasis.**—Allyn and Behrend report a case and briefly notice the previous cases that have been reported as occurring in the United States. They describe the symptoms, and think that the parasite is not so rare in this country as has been generally supposed. With our increasing intercourse with the West Indies, it is likely to become more frequent.

27. See abstract in THE JOURNAL, p. 1502.

31. **Summer Diarrhea.**—The acute gastro-intestinal infections in children during the heated term are of three types: 1, that due to indigestion; 2, that due to bacterial action in tainted milk, and 3, cholera infantum, another often fatal type probably also due to milk infection. The first of these treated early by prompt evacuation of offending substances and suitable feeding, tends naturally to recovery. The successful treatment of the second class depends largely on the complete stoppage of the use of milk, and the promptitude with which any vestiges of its residue are evacuated from the intestines. Breast milk should be stopped in all cases of summer diarrhea in children under two years of age, which begins with vomiting, and temperature, and the dextrinized barley-water, rice water, egg-albumin water, mutton broth, and beef broth used. If there is thirst, plenty of plain boiled water should be given. Feeding should not be oftener than once in every two or three hours and in case of vomiting the stomach should be allowed to rest as far as possible for twelve hours. The medicinal treatment consists in producing thorough action of the intestinal tract for the removal of decomposing and fermenting matters and all milk residue. Castor oil and calomel are both useful. Calomel further acts as a local disinfectant. When given in small doses repeated it is hardly ever necessary to follow it with salines. Where the case has existed for some time and pyrexia and prostration are marked, irrigation of the bowels should at once be resorted to. The choice of tempera-

ture depends on the pyrexia. Primarily it should be lukewarm, but may be cool if the fever is high. Allowing the fluid to flow while the oiled catheter is introduced distends the tube and bowel in advance, facilitating the introduction. To be effective the catheter should go above the sigmoid, and at least four quarts should be allowed for the irrigation with a pressure of not over three feet. The excess will escape in gushes beside the tube. If there is blood in the stools a little tannic acid should be added. Increased peristalsis causing frequent evacuations needs special treatment, opium best serves our purpose to check it; high fever, however, contra-indicates this. In severe types the hypodermic use of morphin sulphate .01 of a grain for a child one year of age not only acts upon the peristalsis, but steadies the pulse and should be employed with 1-800 of a grain of atropin. Where the loss of fluid is very great and can not be made up by ingestion, high saline enemata should be given, or, if necessary, saline hypodermoclysis. A tendency to frequent stools may persist after the acute symptoms and Dover's powders and tannalbin are often useful, but the author recommends a mixture of pepsin in the following prescription:

℞ Pepsinæ ..... gr. i
Acid hydrochlor. dil ..... m iii
Glycerini ..... m iiii
Aquæ menthæ pip ..... ʒss
Aquæ ..... ʒi

M. Sig: In water four times a day after food. Stimulants are often required during an acute stage. When the stools have improved in color and consistency, and the child's general condition indicates a return of more normal conditions, cow's milk may be employed, beginning with a dram to the ounce, or even less. Recovery from a severe attack is usually slow and may take considerable time. Extreme care should be exercised for ten days or two weeks at least.

32. **Hygienic Treatment of Summer Diarrhea.**—The measures recommended by Hazen are the best quality of food, given at regular intervals, prevention of overcrowding of the room and absolute quiet, light loose clothing, use of water and trips, if possible, on the water or in floating sanatoria.

33. **After Treatment of Summer Diarrhea.**—This, according to Taylor, is essentially hygienic and dietetic. Of the various prepared foods the most satisfactory is cow's milk with dextrinized barley-water as a diluent. He describes the method of making the percentage of milk and cautions against beginning with too high a percentage. A good plan he says is to decide on the number of feedings, the amount of sugar, cream and diluent to be taken by the child. For example, he would take three ounces of whole milk, one dram each of sugar and cream, and three ounces of barley-gruel. Seven feedings of this amount in proportion may be given in the twenty-four hours. The gruel is prepared by adding two full tablespoonfuls of barley-flour to one quart of water and boiling for fifteen to twenty minutes. Then add two teaspoonfuls of Cereo, or dextrinize the barley water with any other reliable preparation. If the above treatment fails, kumyss stands next in his estimation. Beef juice three times a day is of value. If the child is two or three years old beef, mutton, and chicken broths with fat carefully removed, and dry toast, etc., may be given. Inunctions of cod liver oil are specially indicated in children with sluggish circulation. Tonics are nearly always needed, and the syrup of ferric iodid seems the best of all forms of iron treatment. Other requisites are the relief of constipation by abdominal massage if possible, or some laxative, such as the fluid extract of cascara,—from 5 to 8 drops in older children,—and lancing of gums if required: a morning sponge bath and life in the open air in the daytime as far as possible and in a well ventilated sleeping room at night. High irrigation of the colon with normal saline solution is better for the mucous colitis following summer diarrhea than any medicinal remedies.

34. **Infantile Bronchitis.**—O'Donovan describes the treatment of acute bronchitis in children, which is imperative as soon as the case is diagnosed. In the milder cases, regulation of the diet, mild laxatives, comfortable warmth of surface, with good ventilation are all that is required. Babies take medicine badly and are best treated by local applications and inhalations, such as the oiled silk jacket and stimulating liniments to produce mild irritation of the skin, steam inhalations, etc. Of expectorants he would use very little; the compound syrup of hypophosphites is best in young children. Older children take medicines better. They should contain muriate of ammonia in proportion to the age of the child. Hypnotics should be given with judgment; sodium bromid will sometimes be all that is necessary. In prolonged cases where the heart-action is rapid and the organ becomes fatigued, strychnin hypodermically is of great service. In every case the child should not be allowed full liberty until the disease is completely cured and such cases were of severe type. 3. Tuberculous family history exerts little influence on empyema. 4. In about one-sixth of the cases the empyema was sacculated. 5. The pneumococcus was found in 50 per cent. of the cases where examination was made; the streptococcus in 33 1-3 per cent.; the staphylococcus in 8 per cent.; the tubercle bacillus in 4 per cent., and no bacterium in 16 per cent. The pneumococcus produced the most virulent infection. 6. Chloroform was the anesthetic of preference. Deep narcosis is contra-indicated, owing to the danger of pus being drawn into the other lung from a ruptured bronchus. 7. In adults with general empyema two inches of the seventh and eighth or eighth and ninth ribs in the posterior axillary line should be resected. In children the same length of the seventh rib. Simple incision, with our present knowledge, is rarely advisable. 8. Operation is indicated as soon as diagnosis is made. 9. Irrigation of the abscess cavity with bichlorid solution, 1-5000, or carbolic acid, 1-100, is indicated, unless drainage is perfect and no sepsis is present. In children the solution may be weaker. 10. The mortality from the empyema proper was 15 per cent. We may hope to reduce it to one-half that number by earlier and more radical treatment.

35. **Empyema.**—The following is the summary of Hartwell's article: 1. Children are especially liable to empyema following pneumonia. Unless promptly relieved by drainage of pleura the prognosis is bad. With such relief the prognosis is good. 2. Pneumonia caused empyema in 50 per cent. of the cases here considered, and such cases were of severe type. 3. Tuberculous family history exerts little influence on empyema. 4. In about one-sixth of the cases the empyema was sacculated. 5. The pneumococcus was found in 50 per cent. of the cases where examination was made; the streptococcus in 33 1-3 per cent.; the staphylococcus in 8 per cent.; the tubercle bacillus in 4 per cent., and no bacterium in 16 per cent. The pneumococcus produced the most virulent infection. 6. Chloroform was the anesthetic of preference. Deep narcosis is contra-indicated, owing to the danger of pus being drawn into the other lung from a ruptured bronchus. 7. In adults with general empyema two inches of the seventh and eighth or eighth and ninth ribs in the posterior axillary line should be resected. In children the same length of the seventh rib. Simple incision, with our present knowledge, is rarely advisable. 8. Operation is indicated as soon as diagnosis is made. 9. Irrigation of the abscess cavity with bichlorid solution, 1-5000, or carbolic acid, 1-100, is indicated, unless drainage is perfect and no sepsis is present. In children the solution may be weaker. 10. The mortality from the empyema proper was 15 per cent. We may hope to reduce it to one-half that number by earlier and more radical treatment.

36. **Sexual Neurasthenia.**—Guiteras deplores the inaccurate use of the term and insists on the necessity of thorough examination of the genital tract as a routine practice in every case of neurasthenia. Frequently the relief of local lesions will be sufficient for the cure. The symptoms of the condition are described and the term, he maintains, should not be limited to those cases which show prominent sexual symptoms: it should be extended to include any cases of neurasthenia in which lesions of the genital tract are found. The treatment is local or general, the former consisting in the relief of morbid conditions, strictures, prostatic inflammation, varicocele, etc., and the latter, in the regulation of diet, attention to the digestion, exercise and hydrotherapy. The cold sponge bath, he thinks, is of prime importance. Exercise, if not fatiguing, is of value, and in conclusion he mentions the use of static electricity.

37. **Masturbational Neuroses.**—Krauss holds that the bad sexual habits are the cause of a large proportion of the neuroses, if not of all, and he advises against giving a favorable prognosis in cases of nervous disease with an underlying history of masturbation coupled with a neurotic family history.

39. **Rheumatoid Arthritis.**—Bailey holds to the bacterial origin of this condition and favors the use of dry hot air followed by massage. He has seen great benefit thus produced. He thinks it is by no means a hopeless disease, but the earlier the treatment is instituted the better. Special attention should be given to lesions of the mucous membranes during middle life and especially to the menstrual disorders in women near the climacteric. Patients should be warned that the slight inconvenience attending the Heberden's nodes may be pre-

monitory of a more serious trouble. No case, however, is too old to be benefited by treatment.

45. **Ovarian Adenomata.**—The article of Schachner is a discussion of the literature on the subjects included in its title. He gives the characteristics of malignant tumors, using as his text the cases personally observed, defining also the Waldeyer cysts which arise from paroophoritic cystic degeneration of the kidney, with discussion of special points as to the diagnosis.

46. **Septic Infection.**—Blincoe calls attention to certain dangers that appear to him possible in the therapeutic methods as commonly practiced. First he asks whether in the light of modern pathology, aided by bacteriology, the promiscuous use of blisters as ordinarily employed is not a dangerous practice, leaving as it does a raw surface in which diseased masses can gain access to the body, unless all the antiseptic precautions are observed. The same question is also asked in regard to the use of wet cups. Another point is the carelessness of dentists and others in handling the instruments used in extracting teeth and still another is the use of the Kelly pad commonly employed in ordinary obstetric practice. He believes that the average practitioner pays little attention to sterilization of the rubber bag. Another common and dangerous practice is the careless use of the uterine sound.

54. **Cutaneous Sarcomas.**—The wide variance in regard to the subject of sarcomas in the medical literature is first noticed by Johnson, who remarks that the etiology of the entire class of disorders is unknown. The classification which he follows here in this article is a histogenetic one. He divides sarcomatous neoplasms into three groups: Fibroblastic sarcoma, the lymphoid cell class, and sarcoid growths. 1. The first of these comprises spindle- and round-celled tumors. True giant-celled sarcoma is not primarily in the skin. The origin is the same for all types from the fibroblast. Between the cells there is present invariably a delicate reticulum, probably composed of collagen, which is absent in epitheliomata. The tumors are all vascular. 2. The lymphoid-celled class is unique. In lymphatic leukemia, Hodgkin's disease, and lymphoma, the cells are all of one type and transition states from one to the other exist. There is no intercellular substance as a product of new cells. There are no vessels ramifying between them and the pre-existent tissue does not melt away before their advance. So far as the skin is concerned, these disorders give rise to true tumor formation, and this may be asserted also of myelogenous leukemia. This class is not related histogenetically to either of the other two. 3. Sarcoid tumors are undoubtedly all fibroblastic in origin, but two of them are probably granulomas of undiscovered source. These are granuloma fungoides and sarcomatosis and with them should be classed Boeck's sarcoid as a granuloma. Modern histologists regard idiopathic sarcoma as having the same character, but it closely approaches sarcoma on one side and endothelioma on the other. The reticulum is present here as in sarcoma and productive inflammations, but these tumors do not metastasize and—except granuloma fungoides—are curable by arsenic. Perhaps the spindle-celled sarcoma, which disappears under the same treatment, is a near relative to Kaposi's sarcoma, so that a transition may be traced by easy and well-known steps from the most malignant of neoplasms to benign tumors, hardly distinguishable from granuloma, a class of infective, generally productive neoplasms, as lymphoid tumors shade from lymphoma through lymphemia to inflammatory hyperplasia. It will be interesting to see whether an infectious agent is ever discovered for fibroblastic sarcoma, or whether a sharp line is to be drawn through the sarcoid group between it and granuloma.

56. **Urine Examination in Male Sexual Disorders.**—Heitzman insists on the importance of urine examination in this class of cases, though they have hitherto been considered as generally of slight importance. Their field of usefulness must necessarily be limited, but in diseases of the prostate, vesicles, and ducts, as well as the urethra, the microscope will often enough determine the exact conditions and will lead to more careful examination of the patient. Inflammations, even if mild, whether acute or chronic, suppuration, ulceration, as well as tumors are all to be recognized and their exact location determined. Thus he mentions the cuboidal epithelia of the prostate gland, while its ducts are lined with columnar epithelia, similar to the columnar epithelia in the seminal vesicles, but not so studded with pigment granules, while the ejaculatory ducts are lined by columnar ciliated epithelia. The smallest cuboidal epithelia in the male genital tracts are those from the prostate; the only ones for which they may be mistaken are those of the ureter, but the columnar epithelia from the ducts will easily clear up the diagnosis. Prostatitis is a more common disorder than is supposed, but the presence of red blood corpuscles will lead to the diagnosis. In the chronic form the red blood corpuscles are either entirely absent or scanty, while pus corpuscles are present in moderate numbers and both these and the epithelia are studded with small, highly glistening, refracting granules or globules, never found in acute cases. In abscess, the finding of connective tissue shreds is important; without these the diagnosis can not be made. They are easily distinguished from mucous-threads, which are pale, more or less regular, and may often run parallel for a considerable distance, while the connective tissue shreds are fibrinous and frequently finely granular. Hypertrophy of the prostate gland may be diagnosed in many cases from urine examinations, viz., the evidence of chronic prostatitis, and malignant tumors when they occur can also be determined by their peculiar epithelial castings. The diagnosis of vesiculitis is also of importance and the most characteristic changes are in the spermatozoa, some of these have the normal appearance, while in others the heads become larger, round and granular, having almost the appearance of pus corpuscles with tails. For examination, only the complete ones are valuable, since broken-off heads may easily lead to errors in diagnosis. Prostatic epithelia are always seen, and mucous-threads and cylindroids may be numerous. In urethritis microscopic examination of the urine is not as important as in the conditions just described, though the symptoms may be so slight as to render such examination important. The presence of so-called gleet-threads is significant, as is also that of urethral epithelia, varying in amount with the intensity of the inflammation. In the mild superficial inflammations only the flat cells are seen, while in the deep-seated lesions, such as ulcerations, the irregular cuboidal and columnar forms are present. Ulceration also is characterized by connective tissue shreds surrounded by zooglea masses and epithelia from the deeper layers with red blood globules. When the columnar epithelia are quite abundant and endogenous, new forms may be found in either the epithelia of the urethra, the prostate gland or the bladder, according to the seat of stricture.

57. **Inversion of the Tunica Vaginalis for Hydrocele.**—Greene recommends this operation, giving Winkelman's description of the procedure—incision down to the sac and incision of the sac 3 to 4 cm. long from above downward, more toward the upper than the lower pole. After the hydrocele fluid has escaped the testicle is drawn completely out so that the entire tunica vaginalis is seen. The incision of the tunica then comes in relation with the insertion of the spermatic cord into the testis, which incision may be shortened by a suture or two so that the testicle can not return through the opening. The tunica and testicle are replaced in the scrotum with the result that the entire serous surface of the tunica vaginalis faces outward toward the loose connective tissue, with which it may soon become fused, the testicle lying outside the tunica, between it and the scrotal wall. The operation is completed by closure of the external wound, and in the majority of cases the testicle is dislocated upward as a result of the operation. He concludes as follows: "1, that this is an easy operation to perform, and that it results in the cure of the hydrocele seems undoubtedly true; 2, the fact of so many operations having been recorded with the history of no unfavorable result as regards suppuration or neuralgia of the testis offers pretty conclusive evidence as to the safety of this operation from the above complications, and 3, the effect it may have in causing atrophy of the testicle or changes in the function of that organ is a subject concerning which clinical data, extending

over a long period of time, are necessary before final conclusions can be drawn."

61. **Fractures.**—The present treatment of fractures, according to Cannon, is traditional rather than rational. We should rid ourselves of the idea of immobilization. No pains should be spared to obtain perfect apposition of the fractured ends, but a moderate displacement, if it is not rotary, does not necessarily impair function. We should endeavor to prevent adhesion of the soft parts to the callus by allowing the patient free movement of the joints above and below the point of fracture as early as possible. Any splint will do for the first dressing that will give support and comfort, provided it is light and simple, without mechanical contrivances. The first dressing should be well padded and lightly bandaged. Complete immobilization of the fractured ends is not possible, and a limited movement facilitates union. The limb should be redressed two or three times the first week to attend to blebs, etc. After eight to twelve days the primary swelling will have sufficiently subsided for permanent dressing. After perfecting the adjustment, apply plaster bandages smoothly laid on over a generous layer of cotton, for leg fracture from toe to knee; for the lower half of the thigh the dressing should extend to the perineum, the cast being as light as possible with strength. After ten to twelve hours it will be hardened and if without crack or flaw, have the patient sit up in bed until he gains his equilibrium. Then he should be supplied with a pair of good crutches, and have the shoe heel on the well foot somewhat raised. He should then be instructed to move about the room at will until the foot swells so as to become painful. After two or three days, the tendency to swell is not great, and quite free exercise may be permitted. Four weeks after the application of the cast remove it and firm bone union will nearly always be found. While the patient may not have much confidence in his slim-looking "prop," in a few hours it will appear much more substantial. Bathing in hot water with much rubbing is now useful for the circulation and flexibility of the joints. After sixty or seventy-five days from date of injury the patient can return to his usual employment.

62. **Local Anasthesia.**—Wishard believes in the use of local anesthesia in genito-urinary operations, such as circumcision, for which, however, it is not applicable in young children and in some cases of excessive adhesions in adults. In shortening the scrotum, in varicocele, in stricture operations, and in perineal section he considers it of the greatest practical value.

63. **Gastric Cancer.**—After a review of the symptoms and diagnosis, Graham concludes that there is no pathognomonic symptom. We must consider carefully all the circumstances of the case to make a proper diagnosis. Experience in handling the cases has not as yet been superseded by ready-made tests that make a diagnosis for us.

77. **Prevention of Tuberculosis.**—The ideas conveyed in Long's article are the contagiousness of consumption and its prevention. Its mortality makes its prophylaxis the most important question before the medical profession of the day; therefore, legal enactment should require the reporting of all cases to the health authorities who should be authorized to inspect them and supervise their control and to compel all inmates of the infected house to have their sputa examined by the city bacteriologist. Societies for the prevention of consumption similar to the one now existing in Philadelphia should be formed to interest the public in and educate it upon this important question. All cases well advanced should be placed in suitable hospitals, if they are not so situated as to avoid infecting others at home. Finally, all patients with consumption detected in its incipiency should be urged to go to a favorable climate and colonies should be established, ultimately by the state, where those who have no means can be employed at outdoor work to maintain themselves under rigid medical supervision.

85. **Diseases of Pregnancy.**—The disorders here mentioned are insanity, of which a case is reported, constipation, dysentery, nausea and vomiting, ovarian and mammary abscess and vulvar edema. As regards the first of these, Campbell thinks that while the asylum is probably the best place, often an even-tempered nurse of good disposition for a constant companion and building-up of the system will effect a cure. As regards constipation she insists on the importance of keeping the bowels freely open. Dysentery appears sometimes to come on in epidemics among pregnant women and when it first appears during the last month it is almost useless to try to control it. She has had some serious cases of dysentery complicating pregnancy in Oklahoma and thinks that the surroundings are probably the causative factor. She reports cases of abscess of the ovary, mammary abscess and edema of the vulva.

94. This article has appeared elsewhere. See THE JOURNAL, xxxvi, p. 1606.

95. Ibid., p. 1611.

105. **Aural Pain.**—The causes of aural pain are noticed, and the failure of routine methods remarked upon by Beaudoux. He thinks that in the ordinary cases accurate diagnosis of the existing condition, whether due to inflammatory myringitis, acute or chronic, etc., should be noted. One common form of earache is due to alveolar periostitis or dental caries, and its diagnosis must necessarily be by the exclusion of purely aural causes, and the conditions of the mouth. Where necessary, drainage through the Eustachian tube or tympanic membrane, evacuation of the tympanum by gentle Politzerization, rest of the parts, prompt removal of the cause, and attention to the nose and throat are the first steps to be attended to. The neuralgias and otalgias should be treated locally or constitutionally. Ethyl chlorid sprayed in the front or back of the auricle or in the external meatus, and oil of peppermint, are often useful as a local treatment, while the constitutional treatments for neuralgia should be employed.

113. **Prophylaxis of Insanity.**—Young says the first method to prevent the increase of insanity should not be in the regulation of marriage or of unsexing persons whose mental infirmity is traceable to or aggravated by sexual abuses. The only method he says is education from the child up, avoidance of over-pressure in education, the disuse of all nerve stimulants, and a healthy mode of life.

116. **Dental Irregularities.**—The causes of jaw deformities are noticed by Talbot, including the hereditary intra-uterine conditions, etc.; but one of the great factors, he says, is extraction of temporary and permanent teeth. The early removal of the teeth before the jaws have developed tends to degeneracy of the jaw, which is a regular condition of civilization, increasing from the East westward in Europe and most frequent among English-speaking and amongst the Scandinavian races. The struggle for existence between the organs dependent on race, evolution, etc., has resulted in the higher races in the triumph of the brain and skull at the expense of the face. The higher the intellectuality the greater the degeneration of the face, jaws and teeth.

119. **Infantile Diarrhea.**—Booker's article is a summary of the literature of cholera infantum up to the fourth decade of the last century, quite full in its details and of interest from a historic point of view.

120. See abstract in THE JOURNAL, xxxvi, p. 1805.

121. Ibid., p. 1413.

FOREIGN.

British Medical Journal, July 6.

Our Duty to the Consumptive Bread earner. J. BURDON-SANDERSON.—The condition of the destitute consumptive and what should be done with him is discussed by Burdon-Sanderson. He calls attention to the importance of prompt admission to some sort of institution where his condition can be treated, and the selection of suitable cases for such, the relation between poverty and the prevalence of phthisis and the beneficial influence of sanatoria. The essential conditions of success in these institutions are the choice of suitable sites, the maintenance of suitable buildings and the selection of suitable cases, their prompt admission together with their medical treatment

and regime, and finally the medical supervision of cases after their discharge. Of course, all these things would cost an immense amount in England. The most feasible mode of meeting the requirement seems to him to be that employers of labor should consent to levy upon themselves a contribution of which the amount would be proportional to and deducible in whole or in part from the wages paid to their workmen. Within its scope that would give equal or greater advantage to the insured than would compulsory insurance as practiced in Germany, but instead of being universal it would exclude the very poorest class, who should be chiefly benefited. Still it may be the best that can be done and he leaves the matter with the profession and calls their attention to the facts.

The Arrest of Pulmonary Tuberculosis. C. THEODORE WILLIAMS.—The various methods of the arrest of pulmonary tuberculosis are described by Williams, who notices first the quiescent tubercle in the form of caseous masses containing tubercle bacilli which are often found in the lung. Miliary tubercle is sometimes converted into fibroid tissue, but with the caseous masses fresh local infection is quite possible and intelligible. Another form of arrest is that tubercular nodules become obsolescent, surrounded by chronic localized emphysema, which prevents the detection of tubercle by physical signs. This is one of the commonest endings of tubercles, the owner of the lungs which have gone through this process is generally a short-breathed individual with a large motionless chest, and is credited with being asthmatic. Many such eventually perish from an attack of hemoptysis through the cracking of some degenerated vessel exposed in the old cavity or the bursting of a small pulmonary aneurysm. The third form of arrest mentioned by him is contraction of the cavity and increase of fibrosis, causing shrinking of the whole lung; the walls of the cavity approximate and sometimes become obliterated by cicatrization, though this is rare. Calcareous degeneration is sometimes observed and undoubtedly indicates obsolescence of tubercle, but is found oftener in the bronchial glands than in the lung tissue itself. Calcareous expectoration of itself must not be accepted as proof of arrested tuberculosis, for active disease may be going on in other parts. Still we sometimes find large calcareous deposits in postmortems, indicating old arrested tuberculosis. As regards the clinical aspects of arrested phthisis he says there are many young men and women who have a history of phthisical symptoms that have disappeared and they seem to do well, especially in high altitudes. Nevertheless in these cases even many years of absolute immunity is not an absolute security from relapse. Some authorities perhaps would regard these relapsed cases as instances of fresh infection, but they show constitutional liability even then. When fibrosis is extensive and firm, as in one case reported, there is not much danger of their breaking down, but such patients are greatly disturbed by shortness of breath and phthisical matter, or latent tuberculosis may still remain in the parts not involved in the extreme fibrinous condition. He, therefore, concludes that the permanent arrest of tuberculosis is not a simple matter, but it is surrounded by many difficulties and one is tempted to imitate Solon's famous dictum and say: Pronounce no case one of arrested tuberculosis till you have seen the necropsy. There is, no question, however, but that there are many cases of real arrest as shown by autopsies of patients that have died of other diseases and a distinction is not always made between general and local arrest, which is very important. He doubts the propriety of using the term "cured," in many cases: arrest is a more appropriate term. This should only be applied when all general symptoms have ceased: when cough, expectoration, night sweats, wasting and physical signs are absent altogether: or in the case of former cavities, when signs of consolidation or contracted cavity have replaced those of the active disease.

The Lancet, July 6.

The Practical Points in the Treatment of Threatened Asphyxia. ROBERT L. BOWLES.—The occurrence of stertor in disease is considered a danger signal by the clinician and becomes the chief subject of this third lecture of Bowles. He describes the forms and characteristics, recognizing two conditions of palatine stertor, and the pharyngeal type, and what may be named mucous stertor dependent upon the presence of mucus in the bronchial tube. He reports cases and offers the following general conclusions: "1. That a 'laryngeal stertor' may be added to the three forms formerly defined. 2. That the three forms of stertor which have a most important connection with the apoplectic state are the palatine, the pharyngeal and the mucous stertor. 3. That these three varieties, whatever their remote cause, are the immediate result of a local mechanical condition—a condition which may always and at once be changed to the great relief of the patients and sometimes to their permanent recovery. 4. That it is necessary to keep the patient on one side, that that side should not be changed, and that the paralyzed side should be downwards. 5. That mucus and other fluids gravitate into and fill up the lower lung; and that therefore if the sides be reversed the mucus will find its way into the opposite lung. 6. That the fluid, crossing from the large bronchi of one lung to those of the opposite, becomes churned into foam and causes dangerous obstruction to the respiration. 7. That the lung, by remaining inactive and filled with mucus, for a long period, is not injured. 8. That these principles apply to all conditions allied to the apoplectic, whether there be mucus or not."

A Contribution to the Pathogenesis of Cancer. JOHN MARNOCH.—The author has experimented with the transposition of epithelial tissue into other tissues, especially those of mesoblastic origin and various cavities of the body, to ascertain whether Kaufmann's experiments can be confirmed. His experiments are reported, and he finds that the epithelial tissue dies quite irrespective of the skin being entirely separated from its natural surrounding and blood supply or whether the blood supply is still continued. There seems to be an antagonism in the results of these experiments and those of Kaufmann, and he suggests that possibly the use of cock's comb or wattle by the latter may have something to do with it—it may possess greater vitality than ordinary epidermis. He notices also the experiments of Lack and Plimmer, and does not account for them, but thinks that they should be further repeated, and successfully, to be convincing.

The Practitioner, July.

On the International Relations in the Prevention of Tuberculosis. HERMANN WEBER.—Weber pleads for general international co-operation in the control of phthisis, and offers recommendations. He thinks there should be numerous sanatoriums in all countries independent of private charity and supported by the state. There should also be in every country an international board of health with a special anti-tuberculosis department, and an international anti-tuberculosis commission watching over the carrying out of international duties against the spread of tuberculosis and efforts for the ultimate extinction of the disease.

Should the State Undertake the Prevention and Treatment of Consumption? NATHAN RAW.—The benefits of sanatorium treatment are first noticed by Raw, who calls attention to the work that is being done in other countries and quotes the resolution passed in the Canadian Tuberculosis Conference, crediting one-fifth of the deaths in the Domiaion to tuberculosis, as evidence of the appreciation of the importance of the subject. He offers the following suggestions: 1. That a short bill should be introduced in Parliament authorizing county councils, municipalities, district and urban councils for the erection of sanatoria. 2. That the local government boards should directly undertake the inspection of all public offices and insist on the removal of all consumptive employes to sanatoria, to be kept there at the expense of the government if unable to pay themselves. 3. That all factories, workshops, workrooms, and offices should be carefully inspected by the government inspectors as to their sanitary and hygienic condition and all cases of consumption among the employes removed to proper sanatoria at the expense of the municipality if their means do not suffice. 4. That the local board of health should insist upon all cases of consumption in public institutions, such as prisons, barracks, workhouses, reformatories, asylums, orphanages, schools, boarding houses, and hospitals, being isolated in separate wards or building so as not to be a danger to

others and that they should receive as far as possible the benefit of open-air treatment. 5. The government should give every encouragement to the local health authorities to appoint special inspectors for dairies, milkshops, and abattoirs, to insure that only non-tuberculous meat and milk are sold. 6. That tuberculosis should be included among the list of infectious diseases, but only to be voluntarily notifiable and that a special code of rules and regulations should be drawn up for the guidance of the health authorities. By-laws should be drawn up by the local authorities in regard to spitting in public places and leaflets be distributed free of charge to the public setting forth the dangers of the disease. He concludes his article with a postscript endorsing the action of the United States Government in excluding tuberculous immigrants.

The Notification of Phthisis Pulmonalis. ARTHUR NEWSHOLME.—The author believes in the compulsory notification of tuberculosis, believing it would be more complete and thorough and would remove the ethical scruples that practitioners feel in voluntary notification, and would have numerous advantages in other obvious ways.

A Personal Experience of "Galloping Consumption." R. MANDER SMYTH.—The author gives a graphic account of his own experience under the Nordrach treatment when in the state of very advanced and galloping phthisis, from which he apparently completely recovered.

The Diagnosis of Tubercular Disease of the Lungs by Means of the Roentgen Rays. E. CLIFFORD BEALE and HUGH WALSHAM.—This article is fully illustrated, showing the use and advantages of the skiagraphic methods in diagnosis of pulmonary phthisis. They do not, however, indicate that it is of value in the earliest conditions, but it would appear that a certain amount of tubercle aggregation must take place before a perceptible shadow is caused. They are useful, therefore, where definite deposits occur, but absence of such shadow must not be considered as positive evidence of the absence of tubercular lesions.

The Early Diagnosis of Pulmonary Tuberculosis. J. J. PERKINS.—The importance of the early diagnosis of tuberculosis is dwelt upon by Perkins, who notices that in many cases it may occur in the sudden, acute form, so that patients can often tell the day on which they fell ill. The special signs of importance noticed are tachycardia, hyperesthesia over the affected apex in the early stages, and initial hemoptysis occurring before physical signs are present, probably due to a very small focus in relation to the wall of the vessels. He thinks the symptom is underestimated. According to his views, hemoptysis in almost every case is a pathognomonic sign of tuberculosis. Pleurisy, he holds, is always tuberculous.

Tubercular Infection Through the Air-Passages. ST. CLAIR THOMSON.—The points of attack of phthisis are noticed. Thomson calls attention, as a special place for suspicion, that ring of lymphoid tissue surrounding the naso-pharynx, the tonsils. The commonest mode of infection, he thinks, is by inhalation and that the inhaled bacillus has infected the system before the air current has reached the larynx, most probably through the lymphoid tissue of the naso-pharynx and pharynx. There appears to him to be no justification for the generally accepted idea that the bacillus is inhaled directly into the pulmonary alveoli.

Tuberculosis in Childhood. GEORGE F. STILL.—Still holds views similar to Thomson as regards the commonest cause of tuberculosis being by inhalation. He holds that the idea that milk infection is chiefly responsible for the heavy incidence of tuberculosis is unclinical. He points out the difference in the condition as it occurs in children and in adults, due to some extent, he holds, to the frequency of caseation of mediastinal glands.

The Surgical Treatment of Tubercular Disease. ALBERT CARLESS.—This is a lengthy paper dealing with the treatment of tuberculosis by surgical methods, but the various conservative methods are mentioned: the cinnamic acid treatment, on which his conclusion is unfavorable, and the tuberculin treatment, which he thinks is defunct as a treatment at least in the surgical cases. The tubercular condition of various organs and their management are noticed in detail. He does not mention some methods that have been used in this country, like the Murphy gas injection.

Some Tuberculous Affections of the Nervous System. FREDERICK E. BATTEN.—Tubercular neuritis is the principal subject discussed by this author, who notices the question whether it is due primarily to some toxic or some concomitant condition. As regards the first he thinks the solution is not yet possible, but as regards any further infection in addition to tubercle being the cause of neuritis, he calls particular attention to the action of alcohol which is frequently given in cases of advanced phthisis as being a possible factor.

Zomotherapy in Phthisis. LEONARD ROBINSON.—The findings of Robin and Binet in regard to the respiratory change in phthisis are noticed, and the deductions of Robin that remedies used to diminish its exaggeration, including cod-liver oil, cacodylate of sodium, and raw meat are indicated, in addition to the rest and fresh-air treatment. This latter, raw meat and serum, is specially considered and the experience of Richet and Hericourt with this so-called zomotherapy. This is not a method of hyper-alimentation, for in the amount of meat juice used the quantity of albuminoids is almost negligible. Cooked meats given in similar quantities act as a toxic substance and rather favor the tubercular process. The success of zomotherapy seems to be a question of dose; it depends upon a minimum ratio between the weight of the patient and the quantity of muscle juice or raw meat taken. Below this minimum limit, amelioration is possible, but a cure must not be expected. He gives in an addendum the formula of the treatment drawn up by Hericourt.

Gazette de Gynecologie (Paris), May.

Phosphoric Acid in Dyspepsia and Neurasthenia.—Worry, grief or any over-exertion of the nervous system causes an exaggerated elimination of phosphoric acid, entailing in time neurasthenic cachexia. Besides this primary neurasthenia, which is always first manifested in the acidity of the urine, the nerve cell may lose its phosphorus from some physical, debilitating cause, usually the defective functioning of the gastro-hepatic apparatus. The missing phosphorus must be supplied and Joulie prescribes for this purpose a diurnal 12 drops of medicinal phosphoric acid; Bardet prefers a lemonade made of 28 gm. of medicinal phosphoric acid; 29 gm. of extract of orange and 250 gm. simple syrup, with water to make one liter. Another formula less styptic and acid, is white of egg, 60 gm.; phosphoric acid, 58 gm., and water to make 400 c.c. Boil until completely dissolved and add extract of orange 20 gm., syrup 400 gm. and water to make one liter. Dose 10 to 15 teaspoonfuls in water during meals. Phosphoric acid deserves an important place in the treatment of dyspepsia. It has the advantage over other acids that it supplies a substance needed in the organism and repairs losses. Its laxative action, however, contra-indicates it in diarrhea or chronic enteritis.

Tubercular Abscess of the Mamma. PLUYETTE.—More than 40 cases of this affection have been published. In the personal case described, the patient, a young woman, noticed that her breast had tripled in size one and one-half months after a slight traumatism with erosion. There was no adenopathy, no retraction of the nipple, no local temperature, distinct redness nor cutaneous edema. The parenchyma of the gland was found almost completely destroyed and the cold abscess was encapsulated in a thick membrane lined with miliary tubercles. Complete recovery, to date, twenty months after extirpation. Two other patients were well, nine months and three years afterward, respectively, when published. A number have died from recurrence on the same, or the other side. In one case the abscess developed eight days after the primary trauma.

June.

Irrigation With Gelatinized Serum in Gynecology.—LAFOND-GRELLETY.—The Auvard curette allows the passage of

a fluid through it and a solution of 10 per cent. gelatin and 1 per cent. carbolic acid, at 37 C. will disinfect the surface as it is curetted and will also prevent hemorrhage. The slow, continuous irrigation thus obtained does not obstruct the already limited field of operation in gynecologic maneuvers. It arrests and diminishes the frequency of hemorrhages in inoperable tumors and relieves the pain temporarily at least. It is well to conclude the operation with a stronger stream of the fluid to wash away detritus.

Presse Medicale (Paris), June 22.

Spasmodic Constipation. A. MAZERAN. — Constipation from spasmodic contraction of the large intestine requires entirely different treatment from constipation due to intestinal atony. It is a distinctly neuropathic affection, the result of diminished nerve force. It differs from constipation due to atony by its prevalence in women; the influence of emotions, brain work, responsibilities, etc., on its production and exacerbations, the lack of dyspeptic antecedents and its variability and absolute irregularity, and its absence of connection with the diet. The abdomen is liable to be tympanitic, sensitive, irregularly painful, with peristaltic waves, abdominal hypertension, and bunches and pseudo-tumors from the contractions. It is difficult to detect fecal matter by palpation. False desires to defecate are experienced. The constipation is exaggerated before menstruation and diminished after it is once established, which is the exact reverse of the condition observed in constipation from atony. The feces are flat or in tiny balls, covered with dried mucus. Flatus is rare and odorless. There are frequently organic spasms and reflexes corroborating the neuropathic origin, gastric hiccough and constriction of the chest. Rectal enemata are sometimes introduced with great difficulty and frequently are retained, causing colic. Medication should be antispasmodic, both local and general, with adjuvants of various kinds to restore tone to the nervous system. Belladonna heads the list under the first indication. Even a small dose, 1 or 2 cg. in a pill or suppository, may prove effective. Asafetida, zinc valerianate and laudanum are also valuable, combined with warm sitz baths, compresses and rectal irrigation—all between 33 and 36 C., with very light massage and measures to strengthen the nervous system and the general health. All depressants, such as the bromids, must be avoided, with alcohol, hot drinks, spiced foods, etc. Purgatives are contra-indicated, but a mild laxative is required during the exacerbations of the constipation. A good combination is 1 or 2 cg. of belladonna, followed in an hour by a teaspoonful of castor oil or 40 cg. of cascara sagrada. The treatment should be completed by a course of tonic-sedative waters.

June 26.

Exploratory Incision in Doubtful Tumors. QUENU.—When a doubtful tumor has acquired the characteristics of malignity, it is inoperable. It should be extirpated while still in the benign stage. Quenu makes a practice of incising all doubtful, operable tumors, in order to determine their nature, proceeding to their ablation if found necessary. He disapproves of specific treatment in cases of doubtful tumors of the mamma, believing that valuable time is wasted on this differentiating measure, while an exploratory incision answers the same purpose and allows the removal of a malignant growth in its incipiency.

Medical Practice in China.—E. JEANSELME.—Among other points of interest in this communication, based on several years of experience in the far East, we note that Chinese barbers massage their customers before proceeding to shave them, and that all classes appreciate the refreshing effect of sponging the body with cloths dipped in very hot water. During an interlude in grand banquets the guests wipe their faces with hot water in the same way. Medical practice is the same as it was centuries ago. The tyranny of routine is so excessive that it has suppressed not only progress but the fluctuations of fashion. Medicine, like the clothes, the laws and beliefs, has become immutable. Whenever the Chinese rouse and break with their superannuated traditions they will undoubtedly proceed with rapid strides. They readily appreciate all that is concrete. Profoundly materialistic, they are supremely interested in all that affects their welfare and their health, and Jeanselme believes that when the time comes, the Chinese may not only copy and assimilate our methods but improve upon them. Chinese physicians have already empirically learned to understand syphilis, its hereditary tendency to the third generation and the necessity of treating it with mercury "until the gums bleed." They combine it with ten other ingredients, and the pills are wrapped in a piece of banana to prevent injuring the teeth. The person making the pills must also hold water in his mouth, for the same purpose.

June 29.

Primary Cancer of the Large Bronchi. D. MERKLEN.—An epithelioma developing in the left bronchus in a dyer, 45 years of age, caused dyspnea, a cough and hoarseness as the first symptoms of its presence, accompanied by blood-stained expectoration. Later there were attacks of suffocation. The diagnosis of constriction of the larynx or trachea was excluded by the indications of compression in the mediastinum and the respiratory silence, betraying the impermeability of the lung owing to the bronchial obstruction, and the accumulation of mucous secretions in the dilated bronchi below the primary tumor. It it generally accompanied by bronchitis, infiltration of the parenchyma of the lungs by secondary cancerous nodules, and sclerous thickening of the pleura, causing dullness with or without exaggeration of the vocal vibrations.

Progres Medical (Paris), June 29.

Food for Idiot Children. BOURNEVILLE.—Two cases of fulminating hematemesis in consequence of swallowing bones, induce Bourneville to emphasize once more the necessity of strict supervision over the food of idiot children, that such accidents may not occur.

Centralblatt f. Chirurgie (Leipsic), June 6.

Topography of the Appendix Vermiformis. P. MUELLER.—It is easy to locate the appendix, even in the midst of adhesions, exudates and perplexing lesions, if it is borne in mind that the root of the appendix is invariably at the point where the three teniæ, passing downward from the colon, meet at the cecum. This point varies in different individuals, but it is readily located by following the tenia libera downward to the cecum.

Centralblatt f. d. Grenzgebiete d. Med. u. Chir. (Jena), June 8.

Death from Burns. EYFF.—Reviewing the various hypotheses that have been advanced to explain death during the first few hours after a burn, Eyff concludes that none of them explains all the phenomena observed. The theory of rapid alterations in the blood seems the most plausible, as clinical and experimental research have demonstrated that the cellular elements of the blood and the red corpuscles in particular, are rapidly destroyed after a burn, forming extensive thromboses, with secondary alteration in the parenchyma of various organs. The consequent shock may result from the rapid development of ptomains supplementing the suspension of the functions of vital organs by these alterations in the red corpuscles.

June 18.

Typhoid Affections of the Bones and Joints. C. HOEDLMOSER.—Since Hubener's article on this subject appeared in 1895, there have been more than sixty-seven communications published, and all are reviewed in this critical summary of the surgical sequels of typhoid fever. The prognosis depends on the strength of the patient, but in general it is favorable, although cases of mixed infection have been known to prove fatal. As soon as an abscess has formed it should be evacuated and early, energetic treatment is usually followed by a rapid cure. Trauma favors the development of these affections. Tapie states that a protracted expectant treatment is indicated in the non-suppurative cases. In one of his patients complete recovery was observed after a year's course. He recommends the application of cold and resolvents. Clarke has reported a case of post-typhoid periostitis of one phalanx in a boy cured by antistreptococcus serum after the failure of

other treatment. He is convinced that there was no streptococcus infection in this patient. The tibia seems to be most frequently affected, in some statistics in 87 per cent., in others in 50 out of 103 cases, with suppuration in 34; the ribs in 29 per cent., the femur in 23. In 38 of the 103 cases mentioned several bones were affected. In Catrin's case the affection appeared first in the right elbow, then in the finger, with pain in one scapula and clavicle, then in both tibiæ, and finally periosteal swelling and suppuration of the right tibia, lasting for a long time. Tuffier found the typhoid bacillus in a suppurating tibia sixteen months later. The protracted, comparatively mild course distinguishes post-typhoid bone-processes in general. Mixed infection is probably the cause of the formation of sequestra. As a rule, these post-typhoid affections appear during convalescence, but Sultan has observed a case in which the abscess appeared six years after the typhoid fever and pure cultures were derived from the pus. The more severe cases of typhoid fever, with a lingering convalescence, seem to be most liable to consecutive bone lesions. The young are most frequently affected. Wurtz states that 46 of 68 patients were under 25, and Bourgeois, 44 out of 52. Such lesions have occurred, however, in patients 60 to 70 years of age. Wurtz witnessed a severe necrosis of the sternum at the height of the febrile process in a boy between 8 and 9. The frequency of osteomyelitis or periostitis consecutive to typhoid fever, was 48 cases in the 6563 cases reviewed, but some were due to the staphylococcus. Keen found preceding typhoid in 39 out of 50 cases of affections of the bones consecutive to a severe febrile infection. Articular rheumatism may develop with the clinical picture of typhoid fever or may complicate it, and typhoid may simulate or complicate rheumatism. Sodium salicylate is useful in differentiating them. Robin and Pribram distinguish four varieties of this borderland typhoid: 1, arthrotyphoid fever, commencing with pains and swelling in the joints followed by the typical symptoms of typhoid fever; 2, suppurative inflammation of the joints in the later stages of typhoid fever, due to typhoid or mixed infection; 3, pseudo-rheumatism with typhoid conditions, localization in the joints with serious general symptoms, and 4, true rheumatic polyarthritis with typhoid conditions, that is, with high fever and delirium. The joint affections during convalescence from typhoid are much more frequent than the above and the suppurative form is most usual. Keen distinguishes a rheumatic, a septic and an essential typhoid form of joint complication. It is usually localized in the hip joint.

Frauenarzt (Leipsic), June.

Hypnosis in Therapeutics. FREUDENBERG.—Treatment of patients with hypnosis or suggestion is not a scientific toy but an actual science which has already reached a high stage in its development. The influence of the mind on the vasomotors, that is, on the nerves that determine arterial tension, is a fact beyond question to-day, and the physician should not hesitate to utilize this science when other means fail. As vasomotor disturbances are the chief element in gynecologic affections, suggestion may prove a valuable therapeutic measure in these cases, which are so often rebellious to medical means. Freudenberg cites several recent cases of miracle cures, and regrets that the physician first in charge of the case had neglected to utilize suggestion which might have proved as successful in his hands as in those of the miracle-worker. He describes an interesting personal case, a teacher whose intense dysmenorrhea incapacitated her for several days every month, seriously interfering with her profession. Nothing pathologic or hysterical could be discovered, and as it was a question of morphin or suggestion during hypnosis, Freudenberg ventured on the latter. She was influenced in profound hypnosis and amnesia of the suggestion commanded. A lasting impression was induced in the third seance and since that time the menses have recurred without pain and normal in every respect.

Miteilungen a. d. Grenzgebiete d. Med. u. Chir. (Jena), viii, 1 and 2.

Curability of Tubercular Peritonitis without Operation. W. ROSE.—In fifty-one cases of tubercular peritonitis, one-third recovered without surgical intervention, while the statistics of operative treatment claim but one-fourth cured. Of the patients between 14 and 20, 7 recovered and 7 died; between 21 to 30, 5 recovered and 7 died; between 31 to 40, 1 recovered and 13 died; between 41 to 50, 3 recovered and 3 died, and between 51 to 70, none recovered and 4 died. Of the male patients, 70 per cent. died and of the 20 women 65 per cent. There were no tubercular antecedents in half of the cases and the mortality with such antecedents was 76 per cent. There were 11 cases of the tumor variety; 36 per cent. recovered; 18 of the ascitic variety with 33 per cent. of recoveries, and 21 of a mixed form with 29 per cent. recoveries. Of the 18 acute cases, 50 per cent. recovered; of the 13 subacute cases, 31 per cent. recovered, and of the 19 with an insidious course, only 16 per cent. terminated favorably. The duration of the cured cases was five months to one and one-third years. The fatal termination occurred in 71 per cent. in less than a year after the first symptoms; in the remainder after two, four and five years. If the peritonitis does not heal in one and one-half to two years there is little prospect of recovery. Most of the patients recovered spontaneously without special treatment. Rest with good air and food seem to be all that is necessary. As the patients are usually free from pulmonary complications and have no sputum there is little if any danger of infection from them. The most rapid recovery occurred in two patients who were able to live at a sanatorium. The diuretics were found capricious in their action. The most satisfactory were 20 cg. calomel three times a day and 3 gm. theobromin, supplemented by saline baths three times a week or a course at a spa. Rose recommends these baths in every case of serous tuberculosis. His article is based on 69 cases at Naunyn's clinic and 2 in private practice. Nine died, 4 were operated on and 11 were lost sight of. Sixteen or 31 per cent. of the remaining 51 cases have recovered; 34 or 67 per cent. died and 1 is apparently in *statu quo*.

Four have been permanently cured for one to two years; 13 for two to ten years. The fibrous variety, with or without effusion, seems to recover as frequently without as with an operation.

Aid to Diagnosis of Infection of the Biliary Passages. F. PICK.—As a contribution to the solution of the question whether it is possible to determine severe infection of the biliary passages by the leucocytosis, Pick describes the case of a woman 49 years of age who in the course of six months had forty-six periodical attacks of chills and fever to 40 C., lasting for eight to eighteen hours, sometimes with and sometimes without pain, icterus and enlargement of the liver. The symptoms indicated intermittent bile fever with a pyemic process, but during the first two months the leucocytes numbered only 4400 to 7000. Later, a leucocytosis of 23,300 was observed during the febrile attacks, falling to 7000 or 9000 the next day. The autopsy disclosed a gall-stone impacted at the outlet of the common bile duct; the biliary passages very much dilated and filled with an abundant, tenacious, glassy mucus, sown with fine white flakes in which bacilli resembling the colon bacillus were found. No suppurative focus could be discovered anywhere in the body. The findings in a second similar case were almost the same. Pick queries whether it is possible that the absence of leucocytosis at first and during the intervals may serve to determine the absence of suppurative processes in other affections of the biliary passages. The gradual increase in the leucocytosis may have been due to the progressive loss of the protective functions of the liver against the toxins generated in the biliary passages, thus allowing the toxins in the circulation greater chemotactic power. The attacks grew less violent and the fever did not rise above 38 C. during the last six weeks—this suggests that the bacilli may have grown less virulent. Experimentation on animals has shown that attenuated cultures induce leucocytosis, while the animal succumbs without leucocytosis to the inoculation of virulent cultures.

Monatsheft f. Prakt. Derm. (Hamburg), May 15.

Disinfection of the Hands from the Dermatologist's Point of View. P. G. UNNA.—A single pyogenic coccus is of

infinitely more importance to the patient during an operation than an army of saprophytes, and consequently every suppurative lesion on a surgeon's hand must be not only disinfected but thoroughly and persistently treated until long healed. Disinfection is less important than the after-treatment of the surgeon's hands in case of any morbid process. Alcohol is a harmless and effective disinfectant and its bactericidal power might be enhanced by adding the tincture of benzoin or benzoic acid. The alcohol, however, is not fully effective unless it is kept in contact with the tissues for a long time, over night at least. As a practical dermatologist, Unna recommends that the surgeon should scrub his hands before retiring, and wrap them in an alcohol compress and then in rubber tissue. When this alcohol dressing is removed in the morning the hands should be thoroughly lathered with a medicinal superoleaginous soap (Unna's *ueberfettete Seife*), and wiped on a sterile towel. The soap closes the pores and all germs alighting on the surface are washed off with the soap just before operating. In order to thoroughly appease the surgical conscience, he adds, soap containing sublimate might be used.

Muenchener Med. Wochenschrift, July 2.

Recovery after Crushing of the Thorax. HEINEKE.—A keg weighing 180 pounds rolled from a cart on the right chest of a man lying on his back. The ribs were broken in twenty-nine places, but the patient, a man of 39, recovered with no symptoms on the part of the heart or lungs, except a transient pneumonia and bronchial affection. Several of the fractures healed in a defective position, including one in the clavicle, and the patient still complains of a pain in the chest when he takes a deep breath or coughs.

Treatment of Syphilitic Sciatica. F. MENDEL.—Three out of the twelve severe cases of sciatica in Mendel's experience during the last three years were of syphilitic origin. They were refractory to the ordinary mercurial treatment but rapidly yielded to five intramuscular injections, in the gluteal region, of 10 c.c. of a 10 per cent. emulsion of hydrarg. salicyl. and paraffin. The injection was repeated every three or four days. Improvement was marked even after one injection. Mendel has made 1500 injections during the last five years. The after-effects are so minimal that many patients prefer this method of mercurialization. They seem to become accustomed to the injections and find them scarcely painful at all after the first. He has never had an abscess follow an injection.

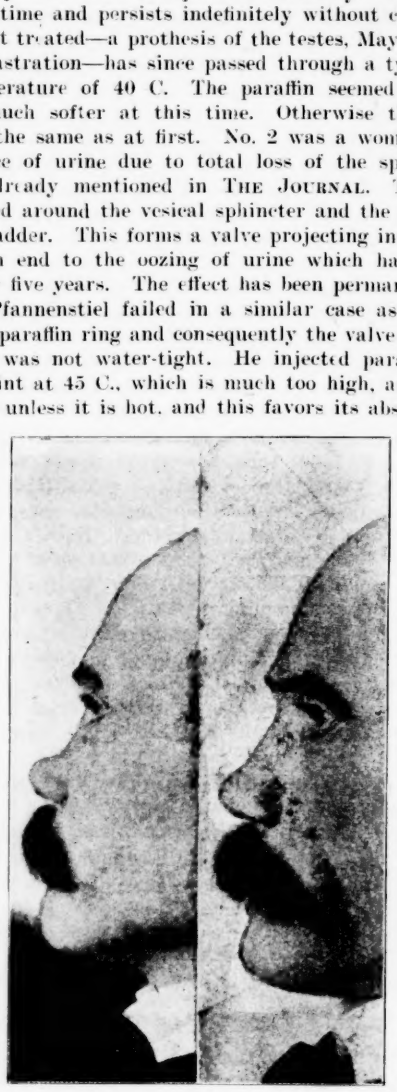
Wiener Klin. Wochenschrift, June 13.

Suppuration Without Bacteria. K. KREIBICH.—Seven cases of herpes zoster were examined at Kaposi's clinic and the contents of the vesicles found completely sterile. An extensive eczema in another case presented the same phenomenon. All the vesicles suppurated in the course of twenty-four hours and yet no bacteria could be discovered in the contents of the vesicles. A recent case has corroborated this possible absence of bacteria in suppuration. All the vesicles in a vesicular eczema of the arm were transparent. The next day they were all turbid and the day after all contained pus, but no micro-organisms could be discovered in the fifty pustules examined by three different methods. The serous contents had become transformed into pus without the aid of micro-organisms. Kreibich concludes that suppuration is merely a quantitative stage of inflammation and not a qualitative, different form of inflammation.

Reflex Cough from Foreign Body in the Ear. M. BREITUNG.—The loud barking cough of a high-school scholar was most annoying and suggested tuberculosis or some other infectious disease. The superintendent therefore considered it necessary to suspend him from school, but Breitung persuaded him not to take this step, assuring him that no clinical evidence of a pulmonary affection could be discovered. He finally found that one ear was plugged with an accumulation of wax around a foreign body. The cough vanished with its removal.

June 20.

Gersuny's Subcutaneous Paraffin Protheses. L. MOSZKOWICZ.—Gersuny has now an experience of thirty cases treated by the subcutaneous injection of paraffin and the results have been invariably satisfactory. Two years have elapsed since his first experiments and the result now is the same as at first, demonstrating that the prothesis can be considered permanent. The paraffin evidently becomes encapsulated in time and persists indefinitely without change. The patient first treated—a prothesis of the testes, May, 1899, after bilateral castration—has since passed through a typhoid fever with temperature of 40 C. The paraffin seemed to be temporarily much softer at this time. Otherwise the artificial testes are the same as at first. No. 2 was a woman cured of incontinence of urine due to total loss of the sphincter and urethra—already mentioned in THE JOURNAL. The paraffin was injected around the vesical sphincter and the ring pushed into the bladder. This forms a valve projecting inward, which has put an end to the oozing of urine which had been continuous for five years. The effect has been permanently satisfactory. Pfannenstiel failed in a similar case as he did not reduce the paraffin ring and consequently the valve opened outward, and was not water-tight. He injected paraffin with a melting point at 45 C., which is much too high, as it can not be injected unless it is hot, and this favors its absorption and



Traumatic saddle nose, before and after injection.

is liable to cause pulmonary embolism, which, in fact, did occur in his case. In patients Nos. 3 and 4, paraffin was injected into the palate or roof of the mouth to close a defect interfering with speech. Nos. 5 to 8 were injected in the anal sphincter to close a cicatricial defect in the sphincter left from a periproctitic abscess or extirpation of a rectal carcinoma. Prolapse of the rectal mucosa was cured in one patient by injecting 10 c.c. under the prolapsed tissue. His artificial anus was also rendered continent for the first time by the injection of 6 and later of 8 c.c. of paraffin around the orifice, partially closing it. The anus is thus rendered continent and the desire gives ample warning, but hard stools require some effort to void them. Nos. 9 to 11 were patients with hernia who refused operation. By the injection of a ring of paraffin around the hernia, an internal pad was formed, which supplemented the action of the truss and kept the hernia definitely under control. The paraffin injections have also proved useful in operations on the joints to prevent anchylosis, as the unabsorbable substance interposed between the articulating parts prevents their growing together. Gersuny added a disinfectant to the paraffin for these cases, and after the joint had completely healed he removed most of the paraffin by puncture. In a case of resection of the upper maxillary bone, a violent neuralgia appeared in the domain of the trigeminus, requiring

resection of a portion of the second branch. In order to prevent the regeneration of the nerve, 2 c.c. of the paraffin were injected. The patient has been completely cured since. In the balance of the thirty cases, the paraffin was injected to cure deformities, usually of the nose consecutive to syphilis or trauma. Two cases are illustrated, showing the bridge of the nose completely sunken in—the "saddle-nose" of syphilis—transformed by the mere injection of .5 c.c. of paraffin into a normal, handsome nose. In another patient the paraffin was injected to remedy a defect in the cheek from an operation, first detaching the parts from the bone beneath. The paraffin was also injected in a case of extensive pitting from smallpox. Gersuny injected for this purpose a mixture of four parts olive oil to one part of the paraffin. This caused the tissues to swell, but after the olive oil had been absorbed, the cicatrix was left level with the surrounding skin, from which it was distinguished only by its smoothness. A young girl was injected with 65 c.c. of paraffin to remedy the cicatricial retraction of the thorax left after resection of several ribs on account of an empyema. The cosmetic results have been most satisfactory in every case. There have been no inconveniences of any kind and the results persist indefinitely the same as at first. The technique which Gersuny follows and which he claims is the only safe method as determined by his experiences in the clinic and by experimental research conducted under his direction, is as follows: The paraffin or unguentum paraffini must have a melting point between 36 and 40 C. This is a soft salve at the temperature of the room and is nearly fluid at that of the body. This soft, yielding body does not irritate the tissues but usually heals in place without reaction and can be palpated as a doughy mass at first, gradually growing harder, until after two months it feels cartilaginous from the proliferation through it and the encapsulation by connective tissue. Intense edema appears after injections in the scrotum or eyelids. In one case some of the vaselin had to be removed on this account. The vaselin is heated to boiling and then cooled by standing the dish in cold water. The syringe is filled while it is still warm and fluid, but it is not injected until it has cooled to the temperature of the room when it emerges like a worm from the point of the fine needle. Embolism from vaselin of this consistency seems to be impossible as there is no absorption as of a fluid. In loose tissue the vaselin must be protected from pressure and muscular movements to keep it at the desired point. In compact tissue a place must be made for it by a previous infiltration anæsthesia and only a small amount should be injected at a time. In injecting paraffin to correct a deformity in the nose, Gersuny inserts the needle from the bridge of the nose down to the tip and injects the paraffin as he gradually withdraws it. When the entire framework of the nose is destroyed, the paraffin must be injected also under the alæ nasi. In injecting cicatricial tissue, if the needle is inserted too close to the surface a visible reaction follows and the parts become red for three or four weeks. The exact melting-point is determined by coating the bulb of a thermometer with the vaselin and then placing the thermometer in water gradually heated. After it melts and floats on the surface of the water the temperature of the cooling water should be noted when the transparent drops become opaque once more.

Objective Disturbances in Sensibility in Case of Aneurysm of the Aorta. H. FRICK.—The only subjective symptom of the large aneurysm in two cases reported, was intercostal neuralgia. The sensory disturbances in the trunk were peculiar in their fleeting, changeable character. One day the zone of anesthesia and hypo-algesia extended from the sternum to the axillary line. The next day there would be hyperalgesia with the sense of contact entirely lost. Sometimes the zone would indicate a lesion of a peripheral nerve, or with hypo-algesia there would be retarded sensation of pain. The two cases indicate that these abrupt changes in the sensory domain may prove to be characteristic of aneurysm. The anesthesia always corresponded to the course of some intercostal nerve in which spontaneous pains were experienced at the time. Hysteria could be excluded in each case.

June 27.

Local Mercurial Treatment of the Fetus. G. RIEHL.—Thirty-three pregnant women in the secondary stage of recent syphilitic infection were treated by Riehl with the usual general specific measures, and in addition a suppository of 1 gm. mercurial ointment in 1 to 2 gm. of cocoa butter was introduced in the vagina to the portio, where it was held in place by a tampon. He commences this local treatment with the beginning of the pregnancy and continues it to the end. Abortion occurred only once, and premature delivery three times in the 33 cases. The total mortality was 12 and the morbidity 21 per cent.; 88 per cent. of the children were born at term and healthy; 2, i. e., 6 per cent. died and the same number showed signs of inherited syphilis. The women were all hospital patients. This local specific treatment seems to exert its influence chiefly on the fetus, as the mother showed no signs of intensive mercurialization. Stomatitis was no more frequent than with the general treatment alone.

July 4.

Cure of Osteomalacia by Diaphoresis. R. SCHMIDT.—It seems now to be generally accepted that the anatomic foundation of osteomalacia is a disturbance in the circulation of the bones, especially in the bone marrow, a hyperemic inflammation, secondary to some unknown process, possibly in the ovaries. To combat this hyperemia and inflammation, Neusser causes an intense superficial hyperemia to draw the blood away from the deep tissues. He accomplishes this with local hot-air baths and the results have established that this treatment is based on sound principles. Schmidt describes two cases of puerperal osteomalacia thus treated. The children were born very rachitic. The first patient had grown shorter by two finger-breadths and walking was impossible on account of the intense pains. The second patient had grown shorter by three finger-breadths and had been bed-ridden for ten months. The hot-air baths were given daily for one to one and one-half hours, usually in the evening, as the patients feel drowsy afterward. The subjective improvement was evident after the first few baths. In nine days the patients could walk and in one month the first patient and in three months, the second, could walk with ease and climb stairs without pain. Both patients resumed their household occupations and consider themselves perfectly well. The second patient notices a slight pain in the sacral region after working all day; the first has no symptoms. The latter took fifty-nine baths in all; the other patient a daily bath for three months. It is possible that the elimination of acids in the diaphoresis may have something to do with the brilliant success of this method of treating osteomalacia. The regulation of the circulation in the bone marrow puts an end to the acid-formation which some assume to be a factor in the process. Schmidt urges others to try this new method of treating osteomalacia and to refrain from combining other measures with it, for the present, in order to judge it on its own merits.

Functional Disturbance of the Tubes after Resection of Jaw. G. ALEXANDER.—Two cases were recently observed at Politzer's clinic in which deafness followed an operation on the upper jaw. The deafness could have been prevented if a small portion of the posterior part of the hard palate had been saved in operating, to preserve the point of attachment of the muscles governing the opening and closing of the tube.

Books Received

DISEASES OF THE INTESTINES. By Dr. I. Boas, Specialist for Gastro-Intestinal Diseases in Berlin. Authorized Translation from the First German Edition, with Special Additions by Seymour Basch, M.D., New York City. With 47 Illustrations. Cloth. Pp. 562. Price, $5.00. New York: D. Appleton & Co. 1901.

OPERATIVE SURGERY. By Joseph D. Bryant, M.D., Professor of the Principles and Practice of Surgery, Operative and Clinical Surgery, University and Bellevue Hospital Medical College. Volume II. Operations on Mouth, Nose and Esophagus, the Viscera connected with the Peritoneum, the Thorax and Neck, Scrotum and Penis, and Miscellaneous Operations. This Volume contains 827 Illustrations, 40 of which are Colored. Cloth. Pp. 1302. Price, $5.00 per volume. New York: D. Appleton & Co. 1901.

TWENTY-FOURTH ANNUAL REPORT OF THE BOARD OF HEALTH OF THE STATE OF NEW JERSEY, and Report of the Bureau of Vital Statistics, 1900. Cloth. Pp. 409. Trenton, N. J.: John L. Murphy Publishing Co., 1901.

CRAZES, CREDULITIES AND CHRISTIAN SCIENCE. By Charles M. Oughton, M.D. Cloth. Pp. 121. Price, $1.00. Chicago: E. H. Colgrove. 1901.

PRACTICAL SURGERY: A WORK FOR THE GENERAL PRACTITIONER. By Nicholas Senn, M.D., Ph.D., LL.D., Professor of Surgery, Rush Medical College, Chicago. Handsome octavo volume of 1133 pages, with 650 illustrations, many in colors. Cloth, $6.00 net. Philadelphia and London: W. B. Saunders & Co. 1901.

MURDER AS A MONEY-MAKING ART. A Social Study. By John C. McKowen, M.D., Member of the American Social Science Association. Paper. Pp. 63. Baton Rouge, La.: Benton Print. 1901.

CLINICAL AND PATHOLOGICAL PAPERS FROM THE LAKESIDE HOSPITAL, CLEVELAND. Paper. Series 1, 1901.

Queries and Minor Notes.

GOD AND THE DOCTOR.

Some time ago, a correspondent asked for the author of the following lines:

"God and the Doctor we alike adore
When on the brink of danger, not before;
The danger past, both are alike requited:
God is forgotten, and the Doctor slighted."

The same question has been asked of the editor of the *British Medical Journal*, who replies as follows (June 6, 1901):

The lines are quoted in Styrap's *Code of Medical Ethics* (London, 1890, p. 75), but the author's name is not mentioned. They have a generic resemblance to the Latin quatrain said to have been written by a mediæval physician, whose name escapes us:

"Tres medicus facies habet: unam quando rogatur,
Angelicam; mox est, cum juvat, ipse Deus;
Post, ubi curato poscit sua præmia morbo,
Horridus apparet, terribilisque Sathan!"

The following translation of this epigram is taken from Timothie Kendall's *Flowers of Epigrams* (1577):

"Three faces the Phisition hath.
First as an Angell he,
When he is sought; next when he helpes,
A god he semes to be;
And last of all, when he hath made
The sicke, deseased well,
And asks his guerdon, then he semes
An oughly Fiend of Hell."

It has been cynically suggested that the gratitude of the patient is a part of his disease. It comes on with the fever, improves during convalescence, and disappears on the return of health.

TUBERCULOSIS AND HEART DISEASE.

PHILADELPHIA, July 17, 1901.

To the Editor:—I should be obliged for answers to the following queries:

1. In what percentage of the cases of chronic valvular disease affecting the mitral and aortic segments has pulmonary tuberculosis developed as a secondary event?

2. If notes have been kept, kindly give the total number of cases, both of valvular disease and pulmonary tuberculosis, as well as the percentage.

3. If no records have been kept, kindly state opinion as to the frequency of the occurrence of pulmonary tuberculosis secondary to chronic valvular disease at the orifices mentioned above.

4. What is the effect of valvular disease—mitral and aortic—upon the course of chronic pulmonary tuberculosis?

5. Have lesions of the pulmonary artery valves seemed to predispose to pulmonary tuberculosis? (Statistics on this head are also desired.)

6. If chronic valvulitis affecting the mitral and aortic cusps exercises a preventive effect, what is the explanation?

7. If disease of the pulmonary valves (I refer especially to stenosis) predisposes to phthisis, how is the effect accounted for?

1605 Walnut St. J. M. ANDERS, M.D.

SECRETARIES OF STATE BOARDS.

MILWAUKEE, WIS., July 15, 1901.

To the Editor:—I would be greatly obliged for the names and addresses of the secretaries of the Medical Boards of the following states: Arkansas, Colorado, Kentucky, Nebraska, Nevada, New Mexico, Oklahoma and Wyoming. W. A. L.

ANS.—Arkansas: Only registration of diploma with county clerk required, or examination by county board if a non-graduate. Colorado: Dr. C. K. Fleming, Denver. New Mexico: W. G. Hope, Albuquerque. Kentucky: J. N. McCormack, Bowling Green. Oklahoma: L. Haynes Buxton, Oklahoma City. Nevada: Dr. S. L. Lee, Carson City. Wyoming: G. R. Johnston, Cheyenne.

STATE BOARD EXAMINATIONS.

In our reference in the issue of July 6, back to the previous answer to the question as to the states where a satisfactory diploma was a sufficient qualification for practice, an exception should have been made of Wisconsin. That state passed a law approved May 8, going at once into effect, requiring an examination in all cases, and also a diploma from a reputable medical college requiring four years' course, and also, after 1901, advanced preliminary educational requirements.

The Public Service.

Navy Changes.

Changes in the Medical Corps of the Navy, week ending July 13, 1901:

Asst.-Surgeon R. T. Atkinson, ordered to the Washington Navy Yard, July 8.

Asst.-Surgeon A. W. Balch, ordered to the *Wabash*, July 8.

Asst.-Surgeon J. R. Whiting detached from the *Dixie* and ordered home to wait orders.

Asst.-Surgeons P. E. McDonald and R. M. Young appointed assistant surgeons from July 2, 1901.

Asst.-Surgeon M. V. Stone, ordered to Naval Hospital, Mare Island, Cal.

Asst.-Surgeon R. T. Orvis, detached from Naval Hospital, Mare Island, July 20, and ordered to the *Pensacola*.

Asst.-Surgeon R. R. Richardson, detached from the Naval Hospital, New York, and ordered to Naval Hospital, Newport, R. I.

Asst.-Surgeon A. E. Peck, detached from the *Pensacola*, July 20, and ordered to the Asiatic Station as relief of Asst.-Surgeon F. L. Benton.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague, have been reported to the Surgeon-General, U. S. Marine-Hospital Service, during the week ended July 12, 1901:

SMALLPOX—UNITED STATES.

Iowa: Ottumwa, June 1-29, 8 cases.
Kansas: Wichita, June 29-July 6, 4 cases.
Louisiana: New Orleans, June 29-July 6, 2 cases.
Massachusetts: Fall River, June 29-July 6, 7 cases; New Bedford, June 29-July 6, 1 case; Worcester, June 21-July 5, 4 cases, 3 deaths.
Michigan: Detroit, June 29-July 6, 1 case.
Nebraska: Omaha, June 29-July 6, 6 cases.
New Hampshire: Manchester, June 29-July 6, 1 case.
New Jersey: Newark, June 29-July 6, 4 cases, 1 death.
New York: June 29-July 6, Dunkirk, 1 case; New York, 91 cases, 25 deaths.
North Dakota: June 29-July 6, Buffalo, 2 cases; Glaston, 5 cases; Lakota, 2 cases; Lidgerwood, 2 cases; Valley City, 12 cases.
Ohio: Cincinnati, June 28-July 5, 1 case; Cleveland, June 29-July 6, 18 cases, 2 deaths; Toledo, June 29-July 6, 1 case.
Pennsylvania: June 29-July 6, Philadelphia, 2 cases; Pittsburg, 4 cases.
Rhode Island: Providence, June 29-July 6, 1 case.
Tennessee: June 29-July 6, Memphis, 1 case; Nashville, 3 cases.
Washington: Clallam County, June 18, 3 cases.
Wisconsin: Green Bay, June 30-July 7, 4 cases.

SMALLPOX—FOREIGN.

Austria: Prague, June 15-22, 2 cases.
Belgium: Antwerp, June 8-15, 4 cases, 1 death.
China: Hongkong, May 18-25, 2 cases, 1 death.
Colombia: Panama, June 25-July 1, 5 cases, 1 death.
Egypt: Cairo, June 10-17, 2 cases.
France: Paris, June 15-22, 11 deaths.
Germany: Berlin, June 18, 2 cases.
Gibraltar: June 16-23, 1 case.
Great Britain: Glasgow, June 21-28, 10 cases, 1 death; London, June 15-22, 1 case.
India: Bombay, June 4-11, 5 deaths; Calcutta, June 1-8, 12 deaths; Karachi, May 26-June 2, 1 case.
Italy: Naples, June 16-23, 149 cases.
Netherlands: Rotterdam, June 15-29, 3 cases, 1 death.
Russia: St. Petersburg, June 8-15, 1 death.
Switzerland: Geneva, June 1-15, 3 cases.

YELLOW FEVER.

Colombia: Bocas del Toro, June 29, 1 death.
Cuba: Havana, June 22-29, 1 death, case came from Santiago de las Vegas.
Jamaica: Kingston, June 1-30, 1 death.

CHOLERA.

India: Bombay, June 4-11, 2 deaths; Calcutta, June 1-8, 63 deaths.
Straits Settlements: Singapore, May 18-25, 1 death.

PLAGUE—FOREIGN AND INSULAR.

Africa: Cape Town, to June 15, 714 cases, 338 deaths.
China: Amoy, May 11-28, 1050 deaths; Hongkong, May 15-25, 200 cases, 87 deaths.
India: Bombay, June 1-8, 86 deaths; Calcutta, June 1-8, 40 deaths; Karachi, May 26-June 2, 45 cases, 41 deaths.
Turkey: Constantinople, July 3, 2 cases.
Hawaii: Honolulu, June 25, 1 death.